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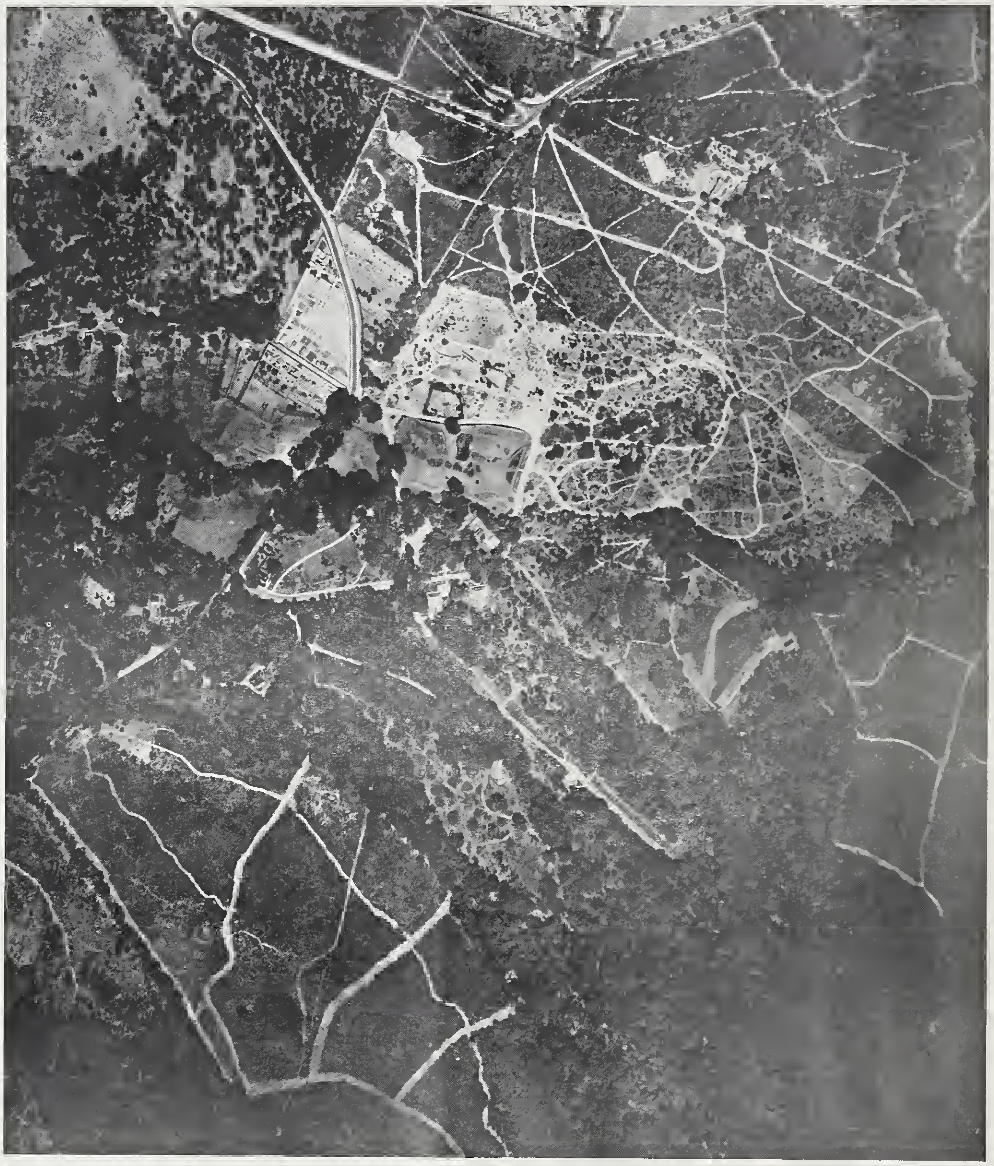

PLATE I: AERIAL PHOTOGRAPH OF KIRSTENBOSCH.

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The Journal of the Botanical Society of South Africa.

EDITED BY R. H. COMPTON.

PART XXXI 1945

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Plate I: Frontispiece. Aerial Photograph of Kirstenbosch, with Key (By permission of Director, Trigonometrical Survey, and Government Printer).

Plate II: *Dimorphotheca calendulacea* at Kirstenbosch. (*Photo*: F. W. Thorns).

News and Notes

The Trustees of the National Botanic Gardens have asked the Council of the Botanical Society to increase, if possible, the Society's annual grant towards the maintenance of the Gardens. The Gardens — in common with other institutions with similar sources of revenue — are faced with a financial crisis, and this can only be averted by a considerable increase of income. The cause of the crisis, of course, is the great increase in the cost of salaries, wages, materials and services combined with the fact that during the war years no countervailing increase of grants-in-aid was obtained. (Even the Government subsidy in respect of cost-of-living allowances to personnel fell far short of a complete refund of the compulsory expenditure under this head.)

The Council has accordingly appealed to Members (1) to enrol new Members and (2) to increase their own subscriptions if possible. The text of the appeal is printed on a later page. We sincerely ask readers to take this matter seriously. Other sources of grants are being approached also: but it is the part and privilege of the Botanical Society to come voluntarily to the rescue of the Gardens at this moment of difficulty and alarm.

Practically every Member of the Botanical Society can think of someone among their friends who "ought" to join, and many of them only need to be asked to reply "of course". It is quite a simple and pleasant matter to obtain new Members, but it needs the personal touch: only the exceptionally conscientious respond to a paper appeal.

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The Trustees have been considering a long-range scheme of development at Kirstenbosch and are anxious to give effect to its various provisions — physical structure of the Gardens, scientific research and publishing, improvements in maintenance, relations with the public. These objectives are at present limited by lack of accommodation, with the effects indicated above, and by lack of sufficient funds for regular use on salaries, wages, materials and services. When these deficiencies have been remedied it will be possible to proceed with the programme and to make use of the capital sums which have been received — and which, it is hoped, will be increased — through the generosity of those who wish Kirstenbosch well.

The most recent benefaction of this kind is that of Mr. Horace V. Pickstone who has presented £1,000 for use as the Trustees may determine. We look forward to using this and other capital funds when it appears possible properly to maintain the pieces of development which they are used to finance. Meantime the Botanical Society, which contributes the voluntary subscriptions of its Members towards the day-by-day expenditure of the Gardens, can justifiably expect the Government and the Councils of Province, Division and City to contribute also, much more abundantly than in the past, towards the same object.

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One of the most serious handicaps which the Gardens have suffered — and are still suffering — is the lack of adequate living accommodation for staff and labour. The geographical position of Kirstenbosch as well as its special needs make it essential to have residential personnel. There are indications of approaching improvement in the position, and if these are realised a great step will be taken towards reliability and continuity of personnel which is so necessary for satisfactory progress.

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Kirstenbosch has been greener during the last summer than ever before, its water problem having been solved for the time being by the construction of a reservoir fed from Skeleton Stream and by the inspanning of a new source of supply, a spring near the northern boundary. This has enabled much more adequate use of hoses and sprinklers in the central parts of the Gardens and Nursery, and better attention to newly set out plants in dry periods. It has also rendered possible the successful raising of several kinds of winter-rainfall annuals during the summer as well as in the wet season. On one bed four successive crops of annuals were planted and flowered during the twelve months.

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Mr. F. W. Thorns, Curator of Kirstenbosch, continues his series of articles on the cultivation of indigenous plants, and this time his subject is "Annuals". These are some of the plants which contribute so largely to the brilliant colour display at Kirstenbosch in September and October — the only season of the year, it may be remarked in parenthesis, when (eyeless) persons may not be heard to say that they "suppose there isn't much to be seen in the Gardens just now".

Actually, thanks to our climate and the wide range of indigenous plants which can be grown at Kirstenbosch, there is no month of the year in which the Gardens are not well worth a visit from people with eyes and a capacity for taking an intelligent interest.

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Gardening in South Africa is at an extraordinarily unintelligent level. This follows from various factors in our human make-up — the " blaze-of-colour " complex, rendering us insensitive to anything less brilliant than a red Salvia — the fact that gardening soils the hands and is therefore left to coloureds and natives who are expected to know all about it without any instruction whatever — the lack of knowledge of plants on the part of even well-educated householders — the prevalence of disgruntled nurserymen who concentrate entirely on wreaths and bouquets — the lack of rivalry except in respect of roses, dahlias, carnations and chrysanthemums — and the general ease (in the climatically favoured districts) with which colour effects of a sort can be produced.

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One of the functions of Botanic Gardens is to stimulate interest in plants which are outside the common rut of petunias and marguerites. Some Gardens are doing this, not only by their own gardening activities, but by the issue of informative and stimulating literature. The Botanical Society does it in a modest way through this Journal. The outstanding example, however, is probably the Brooklyn Botanic Gardens, U.S.A., which holds innumerable lectures, classes and demonstrations and which has now transformed its " Record " into a highly interesting quarterly under the name of " Plants & Gardens ". The Montreal Botanic Gardens is also issuing a most valuable series of leaflets on gardening topics aimed at the ordinary householder with a plot of ground (or even a window-box). The John Innes Horticultural Institution, near London, which distributed over 40,000 institute leaflets during the war, has now begun an admirable periodical bulletin entitled " Answers to Growers ". Many other Botanic Gardens are doing the same, each in its own way. If Kirstenbosch could follow these excellent examples gardening in South Africa might look up. The work is beyond the time and necessarily outside the duties of the present insufficient staff. Will not some benefactor endow a post for public relations — news, education, propaganda — at Kirstenbosch? The Gardens badly need a voice.

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A list of publications on sale at Kirstenbosch is included in this issue of the Journal. Several back numbers of the Journal are still available. In addition there are a number of reprints etc. at low prices on a variety of subjects. There has been quite a demand for these publications, and early application (enclosing payment) is advisable.

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Questions as to the methods of cultivation of indigenous plants are best answered by reference to articles published in this Journal, and the recent ones by Mr. F. W. Thorns, Curator of Kirstenbosch, will be found particularly useful. In addition, the book by the former Curator, Mr. J. W. Mathews, entitled " The Cultivation of Non-Succulent South African Plants " is a valuable source of information, and may be read along with the Gardens seed-list.

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For a book on general garden methods there is nothing better than "The South African Garden Manual" now in the 5th print of its 9th edition: this is published by the Specialty Press, Box 21, Wynberg, and is a mine of useful information and very moderately priced at 7/6. It can be purchased at most booksellers.

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An illustrated brochure entitled " Kirstenbosch Calling " has been produced by Edith Barclay and Christine Guard. This charming little fantasy can be obtained for 2/- direct from Miss Barclay, the Den, Liesbeek Road, Rondebosch. It is also on sale at the Kirstenbosch Tea House and at several of the Cape Town booksellers.

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Mr. Dudley R. D'Ewes, Assistant Editor of the Cape Times, contributes a welcome article on the use of indigenous trees for wind-breaks. This taken with Dr. J. S. Henkel's paper read to the Institute of Park Administration (which deserves to be reprinted for wider publicity) should give food for thought and, we hope, action to the either-pine-or-gum planters who so monotonously attempt to decorate our landscapes. Even if pines and gums provide our best catch-crop trees, that is no reason why they should appear with unfailing regularity in shelter-belts, wind-breaks, parks, avenues, roadside planting, round farms (in those rare cases where farms have any trees at all). There is ample variety among our indigenous trees, and the Forest Department is beginning to make them available.

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Although very little plant collecting has been possible during the past few years, and only a limited staff has been available for propagation, a number of new plants have been introduced to Kirstenbosch and others have been established which were previously poorly represented. Some noteworthy examples are: —

Sutera microphylla collected at Stilbaai and Port Elizabeth, a dwarf shrubby perennial that is rarely, if ever, without quantities of small purplish flowers. An example of a common and overlooked indigenous plant which will be an acquisition in gardens.

Dobrowskya tenella, a procumbent perennial from the Wilderness, related to Lobelia, producing purplish-violet flowers in profusion during the greater part of the summer.

Tecomaria capensis: a yellow colour-form of the Kaffir Honeysuckle contributed by Mr. G. G. Smith, can be trained as a creeper to cover walls, or pruned to form a compact shrub, and has clear yellow flowers which show up well against its bright green foliage. It can be propagated by cuttings and comes true from seed.

Gamolepis speciosa, a rich yellow flowered annual composite from Darling, and *Dimorphotheca calendulacea*, a golden yellow "Namaqualand Daisy" have been re-introduced and are now thoroughly established, making a brilliant display in spring.

Protea venusta, a new dwarf growing species from the Zwartberg Pass and the Kamanassie Mountains, flowered and was described at Kirstenbosch. Unfortunately it is very shy in producing its beautiful pale coloured flowers in cultivation. *Protea Stokoei* plants raised ten years ago have now borne their first oval, clear pink, brown-bearded blossoms, and *Leucospermum Catherinae* with its yellowish wheel-shaped flower heads, the largest in the genus, has been successfully raised in fair quantity from seeds collected in Elands Kloof. The celebrated *Serruria florida* has proved to be one of the easiest of all the Proteaceae to grow: seeds are set freely and germinate well. There are probably more plants now in cultivation at Kirstenbosch than exist in the wild state.

Two Ceropegia species have been added to the collection: *C. Lugardae*, a tall growing climber from Rhodesia with greenish erect flowers, sent by Mr. Neville Jones, and *C. Smithii*, a new species of dwarf creeping habit, with marbled leaves and singular green and purple flowers, discovered by Mr. G. G. Smith of East London and described and figured in the Journal of South African Botany.

The Cycad from the Zululand coast, *Encephalartos kosiensis*, is now firmly established and has produced both male and female cones (in different plants, of course) more than once. Other cycads have also coned well, including the new species *E. Eugene-Maraisii*.

* * * * *

The use of D.D.T. as an insecticide in gardening and agriculture is still a matter for caution and a recognition of its limitations. Experiments at the Royal Horticultural Society's Laboratory at Wisley by Mr. G. Fox Wilson are summarised as follows (R.H.S. Journal Jan. 1946):—

"D.D.T. possesses no "cure-all" properties against plant pests, being only slightly toxic to Aphides which die too slowly from its effects, useless against Red Spider and other Acarine Mites, and has no ovicidal properties"... The possible danger to beneficial insects (predators such as Ladybirds, parasites and pollinators such as bees and butterflies must be recognised, as well as to warm-blooded animals and birds: the properties of the substance not having been sufficiently investigated; the premature publicity which D.D.T. has been given being strongly deprecated. The problem of using D.D.T. to control pests without affecting beneficial insects etc. is still incompletely studied: and it is only too easy to upset the balance of nature and do more harm than good.

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Mention was made in the last Journal of Mr. M. R. Henderson's fine work on the South African Cycads, written at Kirstenbosch and published in the January 1945 issue of the *Journal of South African Botany*. In the October number there appeared the concluding portion of Miss F. M. Leighton's revision of the "Chincherichee" genus, Ornithogalum. Mr. G. G. Smith contributed several new Haworthias, and sundry other new species of indigenous plants were published by various authors. The price of the Journal per volume of four quarterly parts is 20/- post free, and earlier volumes can be purchased from the Gardens at the same price: Members of the Society at present obtain a substantial discount. Unfortunately, owing to the cost of printing which has almost doubled during the war, it may be necessary to raise the subscription next year.

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Captain Salter's "Genus Oxalis" is enjoying a steady sale at Kirstenbosch: the price is 35/- post free, and subscribers to the Journal of South African Botany are allowed a discount of 10%.

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The Gardens have issued a supplementary seed-list, to be read with the main list distributed last year: this has recently been sent to Members of the Society, who are invited to send in their requests by post-card, mentioning numbers only and not including correspondence. Seeds will only be sent out during the months March to September inclusive.

* * * * *

The biggest book on botanical travels in Southern Africa since Burchell wrote of his journeys in 1811/12 has just appeared. It is Dr. John Hutchinson's "A Botanist in Southern Africa" and is an imposing volume of 700 pages with a large number of plates and innumerable photographs, maps and drawings. Dr. Hutchinson was here in 1928/29 and returned in 1930 to accompany General Smuts on a trip to Tanganyika. His narrative is attractive and enjoyable to the general reader and of special interest to the botanist to whom many features of the book will be of great value. There is an enthusiastic preface by General Smuts, a fine portrait of whom forms the frontispiece, and whose friendship and assistance Dr. Hutchinson was fortunate to win. He is also to be congratulated on his publisher, Mr. P. R. Gawthorn, who bore the whole expense and who will only not make a loss if the edition is sold out. The production is an admirable one, bearing no trace of war conditions, and must be a great satisfaction to the author. A review of the book will appear in the Journal of South African Botany. Suffice it here to recommend Members to obtain the very few copies which have reached the Union, and which will be a treasured and indeed valuable possession.

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Kirstenbosch has had the pleasure of welcoming back from active service the following members of its staff: Mr. A. J. M. Middlemost, Assistant Curator; Miss J. W. Steytler, Secretary; Miss R. du Plessis, Mr. H. L. de Villiers, and Mr. A. H. Fairall, Gardeners; Mrs. P. Fairall, Herbarium Assistant. Mr. H. M. Biegel, Gardener, is still absent with the Netherlands forces. Unfortunately, after a brief period Mr. & Mrs. Fairall and Miss du Plessis left to take up appointments elsewhere.

The Gardens also bids farewell, with regret and appreciation of services rendered, to Mrs. D. E. Handley-Smith who acted as Secretary for five years during Miss Steytler's absence, and to Mr. M. R. Henderson who held a temporary appointment in the Herbarium for two years and who has now returned to his previous post in the Singapore Botanic Gardens.

This is the moment also to express a sense of appreciation to those who carried on the work of the Gardens during the war period and so willingly bore the additional duties which necessarily fell upon them. It is a matter of great thankfulness to the Botanical Society as well as to the Trustees and Director that the work of Kirstenbosch was saved from serious depreciation in spite of the difficulties and handicaps which it experienced.

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Letters received from Mr. M. R. Henderson indicate that the Singapore Gardens, including the Herbarium and Library, (and also the Hong Kong Herbarium which had been moved to Singapore) remained intact through the Japanese occupation, and that the Director and some of the staff had been allowed to carry on botanical work. This is thanks to Professor Koriba from Kobe, who was in charge of the Gardens and who did his best to keep them going.

It is also learnt that the Buitenzorg Gardens in Java, including the great herbarium and the administrative offices and records have not been damaged to any serious extent.

On the other hand the enormous Botanical Museum at Dahlem, Berlin, with its magnificent library and plant collections, was completely destroyed. Certain Russian collections were removed to Germany, but their fate is not known.

Considerable damage was done to the Botanical gallery in the South Kensington Museum of Natural History. The John Innes Horticultural Institution at Merton was seriously damaged by a flying bomb: it is however not being re-established in the same place but is being moved to a new and much larger site at Bayfordbury, further away from London.

Heavy damage was done to the plant houses at Kew, but fortunately not to the Herbarium.

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The widespread value of Kirstenbosch for education in Nature Study can be deduced from the attendance of school classes last year (1945):—

1st Term	1233 children
2nd ,,	1478 ,,
3rd ,,	1395 ,,
4th ,,	1176 ,,

The average attendange per school day was 33·8. Only one teacher was available during the year, the other being absent on war service. Now that the second teacher has returned the above numbers will be approximately doubled.

The majority are Primary School children and each child normally attends at Kirstenbosch four times a year. The secondaries, who paid only a single visit, were fewer, but it is expected that the proportion will be increased during 1946 and the number of visits per scholar increased.

The demand for these classes is great and their value undoubted. What may be questioned, however, is (1) whether classes averaging so many children are not too large for a single teacher, especially in the open air and (2) whether the financial recognition given to the Gardens by the Provincial Administration (£125 per annum) is adequate in view of the unequalled facilities for this educational work at Kirstenbosch.

The Karoo Garden was established at Whitehill in 1921 and has been carried on under conditions of increasing difficulty. This was partly mitigated by the recognition given to it by the Botanical Society in 1933, which created a new class of special subscribers to its funds. The Trustees have however come to the conclusion that, valuable as may be the work of the Karoo Garden, the site at Whitehill suffers from its remoteness from centres of population. The new route of the National Road puts Whitehill more off the track than before.

The Trustees, considering that the prosperity of the Karoo Garden depends to a large extent on the interest of the public, and therefore on its accessibility, decided to seek for a new site. This has been found near Worcester, and the hearty co-operation of the Municipality of that rapidly developing and focally situated town has been given. A site of over 36 morgen has been granted to the Trustees: about half of this was town commonage, and the other half was transferred to the municipality by the owner, Mr. C. Heatlie, with this object. The ground lies two miles north of the centre of the town on a range of bold hills with a distinctively karoo vegetation. Development is taking place, the ground is being fenced and a reservoir built: an access road and water connection have been provided by the Municipality: planting is to begin in the 1946 winter. A Curator has been appointed, Mr. J. Thudichum.

The Botanical Society asks those Members who have previously supported the Karoo Garden at Whitehill to continue to do so now that it is being transferred to its new site at Worcester. Moreover it anticipates that a considerable increase in interest and support will take place now that the Garden is within easy reach not only of Worcester, but of residents in Cape Town and the Western Province and of those who pass through Worcester on business or pleasure.

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Anti-erosion enthusiasts — and who can be otherwise? — would do well to study the terracing which has been carried out in the Kirstenbosch nursery during the last few years. The necessity in a nursery for periodical clearances exposes sloping ground to serious dangers of loss of soil: and when plants thinly cover the surface any heavy rain removes soil from some and piles it around others to the detriment of both. This can be avoided by rendering the ground as nearly level as possible consistent with drainage — i.e. by terracing. Formerly the water which ran off the nursery was a fierce cocoa-coloured stream and every heavy rain took its toll of the soil. To-day the run-off is gentle and the water is almost clear. In Southern Europe the industrious peasantry terrace whole mountainsides to save their precious soil: the Kirstenbosch nursery is a sample on a small scale of what is done there by the mile. In South Africa we burn off the vegetation, plough up the steep slopes — and pray for rain! And when the rain comes it takes the soil and the beauty and man's livelihood into the sea, causing misery and loss on its way. Ask the inhabitants of Tiger Valley what they think of the farming operations on the Tigerberg!

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"Estate work" in the lower parts of the Kirstenbosch area occupies a considerable amount of time, but opportunities have been taken of coping with the menace of pine infestation on the upper slopes of the Nature Reserve, with the result that they are freer of pines than any other portion of the mountain. There remains much to be done above the 2,000 foot level, but it is hoped that the Forest Department (which retains control of the plantations in this part of the mountain) may now be able to carry out its programme.

With the end of the war we can expect the Municipal Forest Department to put into operation the promise given by the late City Forest Officer, Mr. Hugo Brunt, that it would then tackle the menace of pines to the natural flora and scenery of the areas in the municipal ownership. Meanwhile the Mountain Club has done useful voluntary work with saw and axe to the great improvement of Echo Valley and the plateau at the top of Kasteels Poort: an anti-pine meet planned for the top of Window Gorge (in the Kirstenbosch Reserve) was interfered with by bad weather.

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The second centenary of William Curtis, who was borne on 11th January 1746, at Alton, Hampshire, England, may serve as occasion to remind ourselves of the services he rendered to South African Botany. In 1787 he founded *The Botanical Magazine*, "a Work intended for the Use of such Ladies, Gentlemen and Gardeners as wish to become scientifically acquainted with the Plants they cultivate". This periodical has appeared regularly ever since, and now approaches its ten thousandth coloured plate and accompanying text. Among the early volumes, produced by Curtis himself with Edwards' illustrations, are many South African plants — species of Mesembryanthemum, Gladiolus, Erica, Pelargonium, etc. — for the introduction of which to cultivation William Masson (who was sent here from Kew in 1772) was largely responsible.

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The prospects for the establishment of a Nature Reserve near East London are encouraging. The proposed site at Gonubie Springs is of great interest and beauty and is well worth preserving in its natural state. Dr. R. A. Dyer, Chief of the Division of Botany and Plant Pathology, and Professor Compton visited East London in November at the request of the Divisional Council, to investigate alternative sites which had been suggested, and put in an enthusiastic report in favour of the adoption of the Gonubie Springs area. More recently Mr. C. J. Sibbett has publicly supported the project at a meeting at East London. It appears probable that the Municipality may take a leading part in the scheme which will certainly provide the city with a valuable asset. Success will be very gratifying to Mr. G. G. Smith and Miss M. Courtney Latimer, Chairman and Director of the East London Museum, who have been the prime movers in the project.

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The Cape of Good Hope Nature Reserve is a shining example of what should be done by local authorities all over the Union by way of conserving their own treasures of scenery, flora and fauna. It is a matter of pride and satisfaction to the Cape Divisional Council that it should have so far-sightedly adopted this enterprise when the Cape Town Municipality held back, and it will reap its reward in the knowledge that it has saved this most romantic and beautiful spot from the clutches of the speculative builder and preserved it in its natural beauty for all time.

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The controversy about the charges for admission to the Cape of Good Hope Nature Reserve may cause one to reflect that Kirstenbosch is open free of charge and to consider what fraction of the crowds that visit it have any real conception of its value to them and of the thought and toil that have been spent to give them the pleasures they accept so lightheartedly. If they had, one would expect that the membership of the Botanical Society would soar as a sign of appreciation of what is so often taken for granted.

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There is some reason to believe that the cause of Wild Flower Protection in the Cape Province will be assisted very materially by recent decisions of the Administration. It has been decided (1) to cancel the existing schedules of protected species and to issue a single new schedule (protecting against both sale and plucking), and the Botanical Society has been asked to draft such a schedule: (2) to produce a booklet containing information and coloured pictures of protected species for the instruction of the Police and presumably of the public also: (3) to request the Police to provide officers specially entrusted with the enforcement of the Wild Flower Protection Ordinances. To this the Police have given willing assent and the matter will be dealt with as soon as the personnel reaches full strength.

If the Ordinances can be seriously enforced against the open and surreptitious sale of protected species, the roadside and back-door hawking of wild flowers and the notorious advantage taken by certain holders of licences and permits, a very great step will be taken in the preservation of what remains of our flora after the depredations and exploitations of the last fifty years or so.

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The Peninsula Fire Committee was formed from representatives of the Committee for the Prevention and Control of Forest and Veld Fires and of the Western Cape Regional Committee of the National Veld Trust, and began work in 1945 under the chairmanship of Mr. C. H. Clayton with Mrs. V. Sampson as Secretary. It accomplished useful work in propaganda by means of the production of leaflets, maps, posters, stickers, advertisements, etc. during the present fire season, and the organisation will be ready for greater activity next year. Its propaganda was aimed at the prevention of carelessness among those frequenting the inflammable veld and plantations of the Cape Peninsula. The prevention of mischievous incendiarism, which probably accounts for the majority of fires, is an unsolved riddle.

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About 200 veld fires occurred in the Peninsula during the season: the fact that only two of these assumed serious proportions is a tribute to the increased efficiency of the fire-fighting organisations of the Forest Department and the Municipality. The essentials are firstly, to get to the fire quickly, and secondly to know what to do when you get there. The authorities are to be congratulated on the serious way in which they are tackling these problems.

The work of the Peninsula Fire Committee should be imitated in the country districts: there is already the nucleus of a similar organisation in Stellenbosch. In the country, however, the real object of propaganda must be the grazier who deliberately burns his veld — and the surrounding country — for his own short-lived advantage with no thought for the loss and damage thereby caused to his neighbours and to the country generally.

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The National Parks Board is chiefly associated in the public mind with the Kruger National Park, which was developed from the old Transvaal Game Reserves: and other National Parks in the Union are also primarily game reserves — one for Bontebok, another for Elephant, a third for Mountain Zebra. So that while tens of thousands of game are being officially shot and snared in Zululand, some care is being taken to preserve odd remnants of our fauna elsewhere, and we can be thankful that the National Parks Board has acted before it is quite too late.

But game reserves are only one kind of National Park, and in the United States, where the idea originated and where it has been most fully and successfully developed, all round conservation of scenery and vegetation is regarded as of as much importance as the provision of a sanctuary for game. Each Park has its own special character, and in only one (Yellowstone) is game preservation an outstanding feature.

Is it not time that we had National Parks in the Cape Province in which the *flora* would be the special feature? Is not the Cape flora as wonderful and worthy of conservation as the Transvaal fauna?

* * * * *

The opportunity now presented to the National Parks Board of establishing a great National Park (or Nature Reserve) in the Outeniquas is surely too good to be missed. It is understood that the Board is contemplating taking the very desirable step of creating a new game reserve (which it will call a National Park) on the north side of the Outeniqua Range for the salvation of the few remaining Mountain Zebra existing there. Why should it not do the " big thing " and unite all the tract of country between the Robinson and Montagu Passes — most of which is already in the possession of the Government — in a National Park worthy of the name? The scenery is grand, the vegetation is typical of the Cape at its best and most diversified, there are many game animals which could be given sanctuary as well as the almost extinct Mountain Zebra, and the Park would be pleasure-giving, educational and of great scientific interest for the future.

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Speaking of the scientific aspect of National Parks, is it not a little strange that the Board, for all its strong and influential personnel, should contain no member who can be called a scientist? By the word scientist is not meant an agriculturist or veterinarian, but a man with the " pure " scientific training and outlook, who thinks of investigation rather than of application, and who regards the life — plant and animal — of the Parks as a subject for objective study and not as a means of making money for somebody.

And if the Board included scientists, would it not be likely to develop the ranger-naturalist educational system which is so valuable a service in the American National Parks? Are our Parks to be just zoos for an uninstructed public to gape at?

* * * * *

The Report of the Royal Society's Committee on the Preservation of the Vegetation of the South Western Cape has been published and can be obtained from the Society and from Messrs. Maskew Miller, Cape Town, price 6/-. It has been written and illustrated mainly by Dr. C. L. Wicht, and can strongly be recommended as a very valuable analysis of the whole problem. The picture drawn of the present situation is a gloomy one — and rightly so as every objective observer must know. " The natural vegetation of the South Western Cape Province is a ground-cover probably better suited to maintain and improve soils and water supplies than any which could be made to replace it." But this vegetation is " deteriorating rapidly ". " The flora of the Cape is its chief beauty. Other natural assets may be duplicated elsewhere, but the flora is unique, it is one of the richest, most varied and beautiful in the world." But " foreign species are dominating and replacing the indigenous ones. Rare species are being exterminated by illegal flower picking." All this is well known to the Botanical Society. What does the Committee recommend? " Large representative national reserves, as well as local reserves, should be established on which all efforts to maintain the vegetation in an unaltered natural state should be concentrated." Outside these areas, " controlled burning " according to definite principles. " All sustained pasturing should be stopped and erosion checked wherever it occurs." " Pasturing on the steep, acid, mountain lands of the Cape is barely profitable and invariably leads to destruction of vegetation and serious erosion." In fact the country needs to protect itself, in its own interests, against the veld-burning grazier of our water catchments. What value have his few goats or scrub cattle which can compensate the community for the destruction and loss he causes?

Dr. Wicht provides a map on which he indicates the districts in which his proposed National Nature Reserves should be established. One is in the Cedarberg, another in the Drakenstein-Jonkershoek-Hottentot's Holland mountain complex, a third in the Swellendam mountains, another in the Swartberg and a fifth in the Outeniqua range.

The Report deserves publicity: cannot the Royal Society, at whose instance it was written, do more than drop it in that stream of oblivion which has carried so many good things beyond human ken? It is not merely idealistic: Dr. Wicht is a forester, his collaborators are all practical men and the Report is meant to be taken seriously and acted upon. Has the Royal Society done anything to bring it forcibly before the notice of the people who have the power to give it effect, namely the Government Departments of Lands, Forestry and Soil and Veld Conservation? Or has it just been placed on a remote shelf in a single book-shop?

* * * * *

The Government in its White Paper on Agricultural Policy has shown itself to be aware of the necessity for a comprehensive and active conservation programme "on a nation-wide scale". This pronouncement goes much further than the rather hesitating Agricultural Department's Report on Reconstruction of two years ago. Meantime the National Veld Trust has published a "Model Bill" founded mainly on the local control principles which have worked so encouragingly in the United States. The Government's own Bill, promised during the 1946 Session of Parliament, has now appeared and has been well received.

Local Conservation bodies, as recommended by this Society (Journal 1944) are to be established, with control of veld burning as one of their functions.

* * * * *

It is not many years since visitors were accustomed to grumble at the inaccessibility of Kirstenbosch and since the first hesitating and erratic attempts to provide a bus service. This is now largely remedied, the Cape Town Tramways Company having recently instituted a service of motor buses from the Plein Street Terminus via the suburbs to Kirstenbosch thirteen times per weekday: buses are also run on this route on Sundays, as well as via de Waal Drive. Application for time tables can be made to the Company. The motor roads to Kirstenbosch are all in good condition, and for those who prefer to walk there is the pleasant and shady route via Bishopscourt which is free of wheel traffic.

* * * * *

This year, as a measure of economy in view of the greatly increased cost of printing, we do not publish the full list of Members of the Botanical Society, which used to fill six pages of the Journal. New Members who have joined since the publication of the last Journal have their names recorded in this issue. Additional advertisements have been included in order to lighten the cost of production of the Journal and thus indirectly to allow of an increased grant from the Society to Kirstenbosch.

The Chairman of the Council of the Botanical Society sent in the following cutting from "Punch":—

WEEDS.

Weeds,
My heart bleeds,
As I go round the garden in tweeds,
To observe that your tribe supersedes
Super-seeds
Of more excellent breeds;
That the food I supply for their needs
Merely feeds,
By some law of the Persians and Medes,
The pest that impedes;
But, since men of all colours and creeds
(In particular Swedes)
Execrate your abhorrent misdeeds,
There is none intercedes.

... ...

Ho! Ho! You perceive where this leads?
Hoe! Hoe! And I will too — You Weeds!

To which the Editor of this Journal, under the influence of the prevailing obsession, replied as follows:—

LEUCADENDRON ARGENTEUM

Silver Trees!
We're desperate about your Disease.
Oh, would we had some spray or grease
Which would vanquish all these
Grubs, weevils or fleas
Which incessantly tease
This fairest of trees
(Which shine in the breeze
With the greatest of ease)
And cause their decease
Suddenly or by degrees!

Are there no experts or perhaps Ph.D.'s
Whom we could beg, on our knees,
And to whom we could even give fees,
To our problem to show us the keys
Upon which we would seize
And so give release
To our lovely long-suffering Trees
From their horrible fatal disease?
Please!

Cape Annuals for the Garden.

F. W. THORNS.

A GREAT proportion of the brilliant colour displays that are to be seen in the Kirstenbosch Gardens in Spring is provided by the flowering of the annual plants that are such a feature of the Cape Flora. I prefer to use the term " Cape Annuals " instead of the often-heard " Namaqualand Annuals ", as a little investigation will show that the species which are most successful here are indigenous to parts nearer Cape Town than Namaqualand. They come in fact from a fairly wide area which falls roughly within 120 miles of Cape Town, mostly towards the North and North East, but also including plants from the Peninsula and areas eastward. These areas all receive a winter rainfall of more than twenty inches, varying from place to place and from year to year, and the plants from them are able to thrive under our average precipitation of some fifty-five inches, most of which falls in winter. As these notes are intended for growers who receive seeds from Kirstenbosch, they are confined more or less to the plants of which we are able to distribute seeds, and it is a matter of regret to us that some of the very attractive species from Namaqualand proper will not become established here in spite of repeated introductions, they being unable to survive and produce seeds here, coming as they do from districts that may receive considerably less than 10 inches of rain per annum.

PREPARATION OF SOIL.

Cape Annuals will succeed under the same conditions that are necessary for the cultivation of most of the garden annuals. An open situation with full exposure to sun is essential, and a light sandy soil preferable to heavy clays. The soil must be reasonably good, but not too rich, or growth will be soft and sappy, and the plants more vulnerable to attack by damping-off organisms and leaf mildew. At the same time one cannot expect to grow these plants successfully on sterile stony land, or where the soil has become impoverished. At Kirstenbosch we prefer to prepare the soil several weeks before planting time, by forking in a fair dressing of compost together with superphosphate or a fertiliser mixture containing a high phosphate and a low nitrate content. After being dug over the soil is left until planting time, when a light application of agricultural lime is raked in.

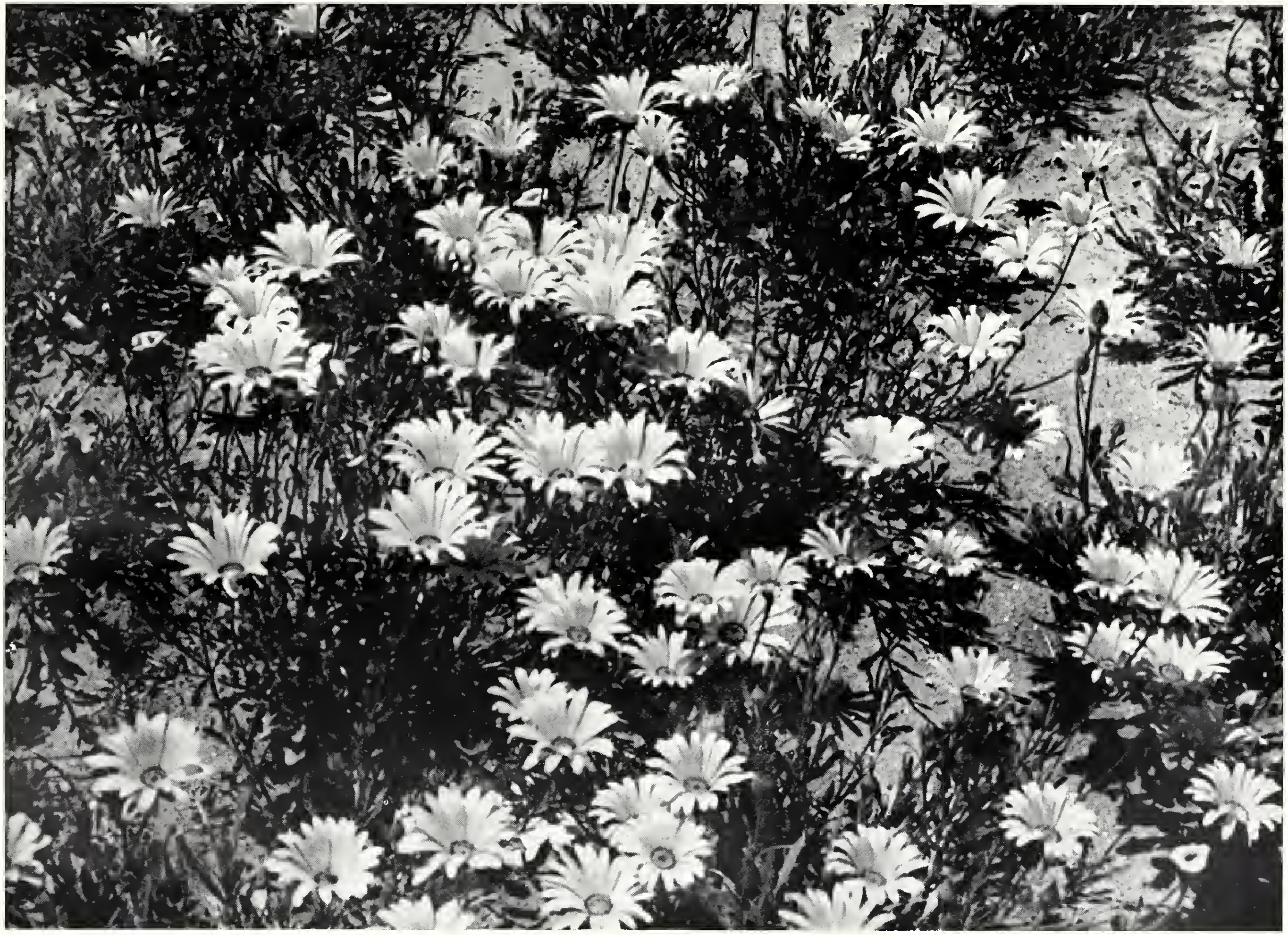
RAISING PLANTS FROM SEEDS.

Although under very favourable conditions it is possible to obtain a good show of flowers by simply broadcasting the seeds, there are many drawbacks to this method, and so far as the Cape is concerned I see nothing to recommend it. Not only is it a wasteful method, as usually only a proportion of the seeds grow, but quite often it will fail altogether. Another objection is that plants from broadcast seeds will start their life in company with germinating weeds, and as the weeds usually outstrip the desirable plants, a tremendous amount of hand-weeding will be necessary to keep them under control. For these reasons we have completely abandoned broadcasting, excepting for occasional patches of Heliophila, and now plant out all our seedlings from nursery beds and tins.

Raising seedlings is comparatively easy. For fairly large quantities it is best to prepare small nursery beds in the open, with a reasonably fine sandy soil, and to sow the seeds thinly, covering them lightly with a little sifted soil. Water must be given regularly if the weather is dry, and when under clear sunny conditions an overhead cover of hessian may be necessary for a few weeks. This must be removed, however, immediately germination has taken place, or the plants will become drawn. If the seeds are sown thinly, no subsequent pricking off will be required, the seedlings being moved straight into flowering quarters when large enough.

Where it is desired to raise but a few plants, or when only a few seeds are available, it is recommended that flat tins or boxes be used for seed sowing. This gives an advantage in that the boxes or tins can be first placed under cover, and gradually moved into full exposure after germination. With this method it will probably be found necessary to prick off the young seedlings into other boxes or nursery beds, giving them an inch or two of space, and grow them on for a few weeks for subsequent planting into the garden. Plants so treated will be much easier to establish should the weather be hot at planting time, as they may be moved with a ball of soil.

For main batches we usually make our first sowing at the end of March and follow up with a second sowing about six weeks later. Our winter weather is variable, and some-



(*Phot.* F. W. Thorns).

PLATE II: *Dimorphotheca calendulacea* at Kirstenbosch.

times it is the early batch which is most successful and sometimes the later sowing. Usually both are useful for obtaining a prolonged flowering season. These main sowings provide the flower displays of September and October, and in favourable years can be continued further by successive sowings of the more adaptable species.

Much has yet to be learned about the behaviour of these annual seeds, particularly the phenomenon of " delayed germination ". What factors govern germination is not certain, but there are some species that will not germinate if sown too late in the year, but will remain dormant and appear the following season, probably during summer rains. Certain species are sufficiently adaptable to make it possible to have them in flower during the whole of the Spring and Summer months by sowing at intervals from April to December, and these are noted in the list of species below. For the rest it is recommended that, as far as the Cape is concerned, they may be sown not later than the end of May.

I have very little definite information as to the correct time of year for sowing in up-country or summer-rainfall districts, but from my own rather limited observations it appears that sowing should be later than in the Cape, and possibly August and September are the best months.

PLANTING.

Cape Annuals can be used for formal bedding schemes, but undoubtedly look their best when planted in mixed fashion in an informal garden. No one who has seen the magnificent displays in the wild would contemplate planting them in rows or geometrical designs. The combinations of colours and shades that can be achieved are endless, and best left to the inclination of the grower, but it is advisable to plant a few of each in pure stands if it is intended to collect seeds for following years.

Planting should be done in cloudy or showery weather if possible, and water given if necessary. Fair supplies of water are needed until flowers begin to open, when only just enough to keep the plants from drying up is required.

The aim should be to space the plants in such a manner that they completely cover the soil when in flower, but care must be taken that they are not over-crowded, or damping off may result. In mixed planting it is obvious that plants of all sizes will be used, and a spacing of about nine inches between plants is recommended. For pure stands of the larger-growing plants a spacing of twelve inches should be given.

LIST OF SPECIES WITH BRIEF DESCRIPTION.

A few of the species listed here have been in cultivation overseas for many years, but under various names. Some of the Dimorphotheca and Ursinia spp. were becoming popular as bedding plants in England during the writer's early gardening days, but rather fell into disfavour during a few wet summers, as they require sunnier conditions for their successful flowering than is usual over there. The botanical nomenclature, particularly of the Compositae, is sadly in need of revision, and as I write I learn that this has now been done. For the present the names given are those in current use at Kirstenbosch, and where recent changes have been made the name under which the plant was previously grown here has been given as well. The dimensions in inches are the approximate height of the plant under average conditions, and for a rough guide when planting it is recommended that the space between plants be a little less than their height.

Anchusa riparia. Best described as a large dark-blue " forget-me-not ". If sown early may be treated as an annual, but is really perennial and will flower repeatedly if cut down and kept watered. 24″.

Arctotis leptorhiza. Bright orange daisies on single stems arising from rootstock. 9″.

Charieis heterophylla. Normally a rich deep-blue coloured daisy, but always producing a few pink-flowered plants that do not appear to breed true from seeds. 12″.

Cotula barbata. A dwarf compact plant, with numerous deep yellow button-like rayless flowers. Suitable for edges of beds or between rocks, etc. Greyish leaves. 5″.

Dimorphotheca calendulacea. One of the most adaptable of plants, which can be grown and flowered almost all the year round by successive sowings. Flowers are large, and a rich golden-yellow. Spring-flowering plants are usually much taller than summer-flowering batches. 12″.

Dimorphotheca dentata. As originally collected this was a somewhat delicate plant, with flowers of an attractive shade of buff or pale orange. Under cultivation it has become more robust and of a deeper colour shade, probably through having become hybridised with the preceding species. 9″.

Dimorphotheca pluvialis. A plant of spreading, almost procumbent habit, with large glistening white flowers. Also a smaller flowered variety with a distinctive purple-zoned centre. 9″.

Dorothianthus criniflorus. An annual mesembrianthemum with a great range of brilliant colours. Prefers sandy soil. Planted about 8″ apart it forms the most brilliant carpeting effect imaginable. To maintain a strain of the best colours it is necessary to weed out inferior or pale shades, or alternatively, to select seeds from only the brighter-coloured plants. 6″.

Felicia adfinis. Dwarf plants with flowers of a pleasant shade of blue. 6″.

Felicia Bergeriana. Procumbent habit. Flowers blue, some with yellow and others with blackish disc. 4″.

Felicia tenella. Pale blue flowered species. 7″.

Felicia tenera. An erect plant with fairly large bright blue flowers. 9″.

Felicia tricolor. (Aster elongatus). A large-flowered species, almost white with a faint tinge of pink, and light purple zone. Occasionally blue-flowered forms appear, but do not breed true. This species tends to be perennial, and will usually flower a second year at least. Old plants flower earlier than those in their first season. 12″.

Gamolepis speciosa. This is one of the most showy of the annuals. Flowers are a deep rich yellow, and are borne in profusion in a flat-topped inflorescence that seems overlarge in proportion to the small wiry-looking plant. 8″.

Heliophila longifolia. A graceful thin-stemmed plant with sky-blue flowers. This is excellent for introducing as a contrast among yellow flowers, or may be massed for background effect. Although it does not transplant as readily as some other annuals, it can be handled successfully if given care. For massed effect it is one species that may be broadcast, but must not be sown too thickly or mildew will certainly ruin the plants. Crowded plants flower from 12″ tall, but for massed planting they should be spaced aobut 12″ apart, and will grow to about 30″ in height.

Matricaria globifera. Yellow button-like rayless flowers on bushy plants. 12″.

Matricaria grandiflora. Similar to above but larger in all its parts. 18″.

Matricaria multiflora. A small-flowered species, usually dwarf. 9″. The Matricarias, being common weeds of the countryside, are not over-popular at the Cape, but appear to be more appreciated up-country. When well grown they are quite decorative, and are best sown late in the season — we prefer September for summer flowering.

Monopsis (Lobelia) campanulata. Small plants bearing a profusion of small bright purple flowers. May be sown at intervals for Spring and Summer flowering. 5″.

Nemesia strumosa. The plants we now grow and distribute as seeds are of hybrid origin, and through selection now contain a wide range of brilliant colours. They may be flowered at almost any season by sowing successive batches, but are usually at their best about October from seed sown in early June. They need a sunny open position, and are rather intolerant of continued wet weather. 12″.

Senecio arenarius. An early-flowering plant, preferring sandy soil, with a range of colours through magenta, purple and mauve-blue. 12″.

Senecio elegans. Similar to above, but only in purple-magenta, and rather more robust in habit. Flowers later than the preceding species. 18″.

Tripteris confusa. A yellow-flowered composite, the seeds of which will not always germinate when required. It is most easily raised during the summer, and does not survive long wet spells. 24″.

Tripteris hyoseroides. Flowers more profusely than the former species, and a little shorter in height.

Ursinia anethoides. Very decorative cup-shaped orange-yellow daisy with reddish brown zone. 18″.

Ursinia cakilefolia. Rich golden yellow. One of the earliest to flower. 15″.

Ursinia calendulacea. Orange-yellow centres shading out to light-yellow ray florets. 15″.

Ursinia foeniculacea. Yellow or orange with blackish disc. Flowers a little smaller than other species.

Ursinia speciosa. (U. anthemoides). Probably the best Ursinia species in many respects. The flowers are large, wide open, and colour ranges from pale yellow through soft buff shades to deep orange, with usually a narrow dark-coloured zone. Flowers a little later than the other species. 15″.

Venidium fastuosum. A true Namaqualand species, and one of the most showy of the annuals. Objecting to wet spells, it is best raised in Spring for summer flowering, and can be sown successively for this purpose. Flowers are large, with a double row of ray florets, orange-yellow with dark shining disc and chocolate zone. Leaves and stems are softly tomentose. 24″. This species hybridises with V. hirsutum and loses much of its character thereby.

Venidium hirsutum (orange). A very free-flowered orange-coloured plant with soft woolly leaves and stem, that can be flowered in successive batches by sowing at intervals from May to November, but is not happy in long-continued rain. 15″.

Wahlenbergia annularis. A thin-stemmed graceful campanula with pale slatey-blue flowers. Has a reputation

TO MEMBERS OF

The Botanical Society of South Africa.

The Trustees of the National Botanic Gardens have drawn the attention of the Council of the Botanical Society to the urgent necessity for a large increase in their annual income if the work at the Gardens is to be maintained properly. Costs have gone up greatly (Salaries, Wages, Cost-of-living Allowances, Implements, Fertilizers, Printing, etc., etc.) without a commensurate addition to the income of the Gardens.

An appeal has been made to the Government for an increased Grant, but it is hoped that Members of the Botanical Society will realise that an obligation rests also on individual citizens to come to the financial assistance of the Gardens.

So far as the Society is concerned, assistance can be given in two ways, viz:—

1. By enrolling new Members.
2. By Members voluntarily increasing the amount of their Subscriptions, which are:—

Life Members, not less than	£25 0. 0.
Family Members, not less than	£2 2. 0. per annum.
Ordinary Members, not less than	£1 1. 0. per annum.
Associate Members, not less than	5/- per annum.

We therefore appeal to each Member firstly to secure at least one new Member among his friends. (It may be convenient to use the enclosed Form of Application, though this is not necessary.)

And secondly we ask Members to increase their own Subscriptions as far as they are able, either by paying more than the minimum or by transferring to a class of membership with a higher subscription.

We confidently look for a special effort from our fellow Members at this critical moment, as we feel sure they can be relied upon to come to the help of Kirstenbosch, the national institution of which we are all proud.

W. DUNCAN BAXTER, *President.*
C. J. SIBBETT, *Chairman of Council.*
R. H. COMPTON, *Director of National Botanic Gardens.*

P.O. Box 267,
CAPE TOWN,
2nd April, 1946.

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for being difficult to germinate from seeds, and is best sown late in the sowing season.

The foregoing list is of species that are grown in fair quantity at Kirstenbosch at present, and of which we are usually able to distribute seeds. The normal flowering season for them is from early September to middle of November, but as stated above it is possible to arrange for some of them to flower at other seasons when under control or with different climatic conditions. No good purpose would be served by swelling the list with species that are still under trial, or those that have been introduced but so far have failed to survive, alhough there is every reason to believe that we shall eventually be able to add a number to our seed list.

In conclusion I would emphasise the fact that these plants respond to good cultural methods as much as any other garden annuals, and that although they may be wild plants indigenous to this country the best results are not likely to follow the casual scattering of seeds on any available ground, but where the gardener has exercised his skill.

A Plea for South African Trees.

By DUDLEY R. D'EWES.

IT was reported recently that a Californian town had decided that its war memorial should take the form of a grove of their own beautiful giant Sequioias, planted as seedlings, and tended during the life of the present generation to be a memorial lasting perhaps until the year 4,000. If we planted a similar grove here, would the trees be natives or exotics?

I ask the question in all seriousness, for it seems to me that the cult of the exotic is yearly becoming stronger here among those who plant the most trees; that is, among farmers, municipalities, and the forestry service.

Not long ago, after the Cape Western Committee of the National Veld Trust had shown a film about shelter-belts on the American plains, I mentioned to a man whom I know to be normally well informed that the American conservation service makes a great point of gathering the seed for wind-break trees from local sources. His immediate reply was: "Yes, of course they can do it. We can't. No South African trees are suitabe for windbreaks ".

Recently, in a popular South African farming journal, I have seen the replies to two inquiries about suitable trees for wind-break planting begin with the words: "The most suitable exotics for your purposes are . . . .".

Now nobody can deny that for commercial softwood planting the exotic pines are almost the only possible choice, and that for many purposes and in many situations the eucalypts are equally indispensable. But it is time that more attention was given to the choice of the right type of tree for wind-breaks, for avenues, and for "amenity planting" in general. My contention is that for all these purposes we should first try our own local trees. One of the reasons why exotics are so often planted for these purposes is that they are so easily and cheaply obtainable.

Government and private nurseries have to raise so many seedlings of the exotics for the plantations that they tend to forget the existence and the peculiar virtues of trees whose end-product is not measured in cubic feet but in beauty, in their ability to divert wind, or in the shelter given to wild life. This influence is as strong as the influence which tends to make all cheese "Cheddar", and all red wine either "burgundy" or "claret"; a process of false standardisation which people accept because those who know the virtues of the more specialised products (and trees) do not fight hard enough for them.

To come down to details: wind-breaks in the Western Cape are often pines, very often *Pinus insignis*, and too often simply planted in a double row. This type of wind-break offends against the best practice, which seeks a curved cross-section in the wind-break rather than the perpendicular paling effect of the pine. Moreover the pines, as they approach maturity, often shed their lower limbs and degenerate from wind-breaks into an ideal instrument for the creation of draughts.

May I, as a non-technical man, offer the following suggestions for criticism?—

Here in the Western Province we have one tree at least which seems to me to have everything needed for wind-break planting: the wild peach (*Kiggelaria*). It is quick-growing, reasonably robust, squats firmly on the ground if not maltreated in youth, and develops a nicely rounded outline. Others, like the more sprawling wild almond, spring readily to the mind; but it is my purpose here to suggest an attitude of mind, not to catalogue an arboretum.

A good wind-break ought to be more than a double or triple row of trees. It ought to be planted for continuous service both in turning away wind and in providing shelter for birds and the smaller mammalia, as well as in providing, from time to time, a supply of firewood for the farmer's servants or even timber for his own profit. With some little trepidation I would therefore suggest the following as an experimental windbreak-planting for a situation in the Western Province on reasonably good soil:

Let the planting plan be according to the following scheme:

```
x1        x2        x3        x4
     0         0         0         0
x5        x6        x7        x8
```

The " X's " denote wild peach trees, spaced say fifteen feet apart each way. The " O's " denote yellowwoods, which being in the centres of the blocks of four wild peaches would have adequate room for root development, and would be encouraged by competition for light and air to grow upright.

When the wild peaches are about three-quarters mature, alternate trees on one side (say x1 and x3 on the diagram) would be chopped out, their wood being used as firewood and their leaves and twigs going into the compost heap. They may be replaced with others of the same species, or each of them could be replaced with two keurbooms, spaced five feet on each side of the felled tree in the row. (If the wind-break is planted for protection against the south-easter, the wild peaches can be felled, and the keurboom planted, as soon as the soil is thoroughly soaked by the first rains. If the protection is against the north-wester, the keurboom could be planted in winter to settle in, and the wild peaches felled at the end of winter when all danger of north-westers is over). When the new trees are well grown, alternate trees on the other side would be chopped out, the first to go being x6 and x8, and so on down the row. When their replacements have grown, the original plantings on the former side (x2 and x4 and so on) are replaced. When they have grown the x5 and x7 series is replaced. This rotation can continue for ever, with change of species as experience dictates. Around and within the outside rows the growth of shrubby plants like taaibos, pelargoniums, etc., should be encouraged.

The advantages of this scheme would be, firstly, a good curved cross-section to deflect the wind upwards, instead of imposing a paling to induce swirling air currents; secondly, reasonable wind-tightness on the ground-level; thirdly, a permanent shelter (in contrast with many wind-breaks where clear felling after a period leaves the sheltered area without protection); fourthly, there is an approach to a sustained yield of firewood at least; fifthly, there is a chance that the planter or his children may turn a useful and honest penny, after many days, from the yellowwood; sixthly, there will be perpetual shelter for birds and the lesser beasts; seventhly, it will look better.

In farm avenues, too, a little ingenuity would reconcile to-day's craze for quick results with the desirability of planting trees that combine robustness, beauty and long life. For example, alternate planting of keurboom and any of our slower-growing trees (yellowwoods, kaffir plum, rooi els, among others), would very soon give a pleasing alternation of graceful keurboom, flowering plentifully in season, with the darker foliage of the slow-growing trees. When, perhaps after 20 years, the keurboom are past their prime, they could be felled to leave the others as an avenue worth handing down to posterity. If there is room to spare, the avenue, like the wind-break, may be double or triple planted and managed on a sustained yield basis.

So could municipal plantings in the streets — but that is another controversy altogether.

(Since writing the above I have seen a report of Dr. J. S. Henkel's paper on " Indigenous Trees Suitable for Parks, Streets and Roadsides ", read before the conference of the Institute of Park Administration at Pietermaritzburg last year. It is a paper which will hearten all those who have been pleading for recognition of the value of our own trees, and ought to be made known as widely as possible. — D.R.D.).

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

ANNUAL REPORT, 1945.

Your Council have pleasure in submitting hereinunder the Thirty-second Annual Report and Financial Statement of the Society for the Year ended 31st of December, 1945.

MEMBERSHIP.—A nett gain of Membership during the year of 91 has for the first time brought the number of subscribers to the Society beyond the 2,000 mark. The actual figures of Membership at the end of 1945 are given below, those in brackets showing the corresponding numbers on the 31st of December, 1944:—

Life Members	93	(93)
Family Members	114	(106)
Ordinary Members	1,195	(1,117)
Associate Members	617	(612)
	2,019	(1928)

FINANCIAL.—As shown by the Accounts annexed, the Grant to Kirstenbosch for the year under review amounted to the sum of £1,043 2s. 11d., being an increase of £14 5s. 10d. on that for the previous year. The amount to the credit of the Life Members' Fund is £1,305, being £75 greater than at the end of 1944. Investments total close on £2,400, being made up of funds on fixed deposit and in Savings Banks, to which figure must be added a credit balance of £214 on current account with the Standard Bank. The investments total of £2,400 covers the amount of £1,305 to the credit of the Life Members' Fund and the amount available from the year's working to provide for the grants to Kirstenbosch and the Karoo Garden.

ELECTION OF OFFICE BEARERS.—At the Annual Meeting held on Monday, the 16th April, 1945, the following Office Bearers were elected:—

President:—Mr. W. Duncan Baxter.

Vice-Presidents:—Professor R. H. Compton, Dr. D. Bennie Hewat and Mr. F. W. Metelerkamp.

Members of Council:—Mrs. L. Bolus, Mr. H. Hugo Brunt, Mrs. H. Burton, Mr. C. H. Clayton, Professor R. S. Adamson, Dr. E. L. Gill, Mr. F. A. C. Guthrie, Miss M. E. Johns, Mr. J. D. Krige, Mrs. G. W. Lyon, Colonel H. A. Moffat, Miss K. Murray, Mr. C. J. Sibbett, Mr. H. C. Starke, Miss E. L. Stephens, Captain Charles Struben, Major G. B. van Zyl, Mr. A. J. Voigt, The Right Honourable Chief Justice E. F. Watermeyer and Mr. W. C. West.

At the Meeting of Council held on the 11th June, 1945, Mr. E. W. McL. Thomas was elected a Member to fill the vacancy caused by the regrettable death of Mr. H. Hugo Brunt.

JOURNAL OF THE BOTANICAL SOCIETY, *Part* XXXI, 1945. This number is expected to be ready for issue to Members and others at the beginning of April. This Report and Accounts will appear in it.

DISTRIBUTION OF SEEDS.—A Seed List comprising 549 species from Kirstenbosch and Whitehill was issued and during the year 449 consignments of seeds, numbering 7,185 packets in all, were despatched from the Gardens to Members of the Society and to scientific institutions, this being a further increase over previous distributions.

ANNUAL GATHERING, 1945—This was held in the open at Kirstenbosch on Saturday morning, the 6th of October, in good weather and was fairly well attended.

KIRSTENBOSCH SUNDAY, 7TH OCTOBER.—This event, despite unfavourable weather, attracted fair support from the public and resulted in the collection of £75 12s. 1d. in aid of the South African Red Cross Society.

KAROO GARDEN.—The Trustees of the Gardens decided to transfer the Karoo Garden from Whitehill to a new site near Worcester, the ground and many facilities being generously granted by the Municipality. A Curator, Mr. J. Thudichum, was appointed and the work was begun in August. It is hoped to begin planting in 1946 when the fencing and water system have been completed. The Council of the Society hope that subscribers to Whitehill will continue to support the Karoo Garden in its new position and that the number of subscribers may increase.

At the suggestion of the Council, the Trustees agreed to leave the existing fence at Whitehill in position so as to preserve the old area as a Nature Reserve. Mr. J. D. Logan, to whom the land reverts, has kindly consented to this.

WILD FLOWERS PROTECTION SECTION.—Membership of this Section stands at 294. The Annual Report of the Committee is annexed hereto and will be printed in the next issue of the Society's Journal.

VELD CONSERVATION.—The Report on this subject drawn up by the Council's sub-Committee (Captain C. Struben, Professor R. H. Compton and the late Mr. Hugo Brunt) met with a favourable reception and the encouraging comments made by the Secretary for Agriculture and Forestry were published with the Report in the Society's Journal, Part XXX, Page 16.

OBITUARY.—The Council desire to express their sincere regret for the loss that the Society has sustained by the death during the year of a number of old subscribers to Kirstenbosch and Whitehill. Included in those who have passed away were three Life Members: Mr. A. K. Bulley, the Honourable Ralph Close and the Honourable Richard Stuttaford.

THANKS.—Your Council wish to express their great indebtedness to the South African Association for the free use of their Board Room for Meetings of Council and the Wild Flowers Protection Committee and to the daily press for their co-operation in reporting the proceedings of the Society.

C. J. SIBBETT,
Chairman.
L. A. SOLOMON,
Hon. Sec. & Treasurer.

Report by the Wild Flowers Protection Section Committee for the Year Ending 31st December, 1945.

There were three Meetings of the Committee of this Section during the year under review. Included in the business transacted were the following subjects:—

ILLEGAL SELLING OF WILD FLOWERS.—On the initiative of your Committee a number of sellers of protected flowers have been fined and the blooms confiscated, with the result that there has been a marked improvement in compliance with the law by dealers in flowers on public stands and elsewhere.

WILD FLOWER RESERVES.—Professor Compton, Chairman of your Committee, visited East London at the invitation of the Divisional Council in order to advise on the establishment of a Nature Reserve in the East London District. Dr. R. A. Dyer, Chief of the Division of Botany, Department of Agriculture, was also invited to confer. Suggested sites were inspected and a report embodying advice on the subject and on the most suitable locality was sent to the Divisional Council.

During the year Mrs. Bolus as Chairman of the Reserves sub-Committee has been in negotation with the Divisional Council and Municipality of Tulbagh for the creation of a wild flowers Reserve in that District and the matter is being favourably considered.

FIRE DESTRUCTION.—Your Committee has co-operated with the Committee for the Prevention and Control of Forest and Veld Fires with a view to aiding that body in its work of enlisting public interest in fire protection and control. On the suggestion of Mr. C. H. Clayton, Conservator of Forests and a Member of your Committee, this Section was asked to contribute towards the cost of propaganda. A member of the Committee accordingly undertook to raise funds for this purpose.

ADMINISTRATION OF ORDINANCE.—Representatives of your Committee met the Executive Committee of the Provincial Council in February, when emphasis was laid on the need for the appointment of one or more special officers for the purpose of enforcing the provisions of the Wild Flowers Protection Ordinance, particularly in regard to the illegal hawking of wild flowers, the sale of protected flowers, and the inspection of nurseries registered under the Ordinance. These views were amplified in memoranda addressed to the Provincial Secretary, and the whole subject is receiving the earnest attention of the Administrator's Department.

The Committee has been approached by the Provincial Secretary on several occasions for advice in connection with the issue of permits under the Ordinance. Strong representations have also been made to the Provincial Secretary in cases where abuse of permits issued by the Department has come to the notice of the Committee.

Various requests have been received from the Police for identification of wild flowers offered for sale and these have been dealt with at Kirstenbosch.

Your Committee wish to express the great regret that they feel in the loss they have sustained by the untimely death early in the year of Mr. H. Hugo Brunt, Cape Town City Forest Officer, whose knowledge and experience were always at their disposal. Undoubtedly it was the strain imposed on him when superintending the beaters at the huge fires that occurred in the Peninsula and the Steenbras Area that hastened Mr. Brunt's end.

General.—The Membership of the section stands at 294, being a nett gain of 2. The amount to the credit of the Section as at 31st December, 1945 was £465 5s. 4d., being an increase of £69 11s. 7d. on the corresponding figure for 1944.

The following were the Members of the Committee at the close of the year:—

Professor R. H. Compton, *Chairman.* Mrs. L. Bolus, Mrs. H. N. Burton, Mr. C. H. Clayton, Dr. Bennie Hewat, Mr. J. D. Krige, Mr. F. W. Metelerkamp, Mr. C. J. Sibbett and Mr. W. C. West.

And the following were co-opted by the Committee as Members:—

Dr. L. Gill, Mrs. G. W. Lyon, Miss K. Murray, Mr. H. N. Porter and Senator the Honourable M. J. van Breda.

R. H. Compton,
Chairman.
L. A. Solomon,
Hon. Secretary.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

BALANCE SHEET as at the 31st DECEMBER, 1945.

	£	s.	d.	£	s.	d.
Life Members' Fund as at 31. 12. 44	1,230	0	0			
Received during 1945 ..	75	0	0			
				1,305	0	0
Subscriptions Paid in Advance ..				111	6	0
Subscriptions to the Karoo Garden:						
Balance as at 31. 12. 44 ..	147	1	10			
Received during 1945 ..	151	4	0			
	298	5	10			
Paid to National Botanic Gardens	147	1	10			
				151	4	0
Subscriptions to the Wild Flower Protection Section:						
Balance as at 31. 12. 44 ..	395	13	9			
Received during 1945 ..	65	19	0			
Interest earned during 1945 ..	9	2	11			
	470	15	8			
Less:						
5% of 1945 Subscriptions credited to General Administration Expenses £3 6 0						
Stationery, Bank Charges, etc. .. 2 4 4						
	5	10	4			
				465	5	4
Bailey-Taylor Show Card issue:						
Balance on hand				6	7	7
National Botanic Gardens:						
Surplus for 1945				1,043	2	11
				£3,082	5	10

	£	s.	d.	£	s.	d.
Cape of Good Hope Savings Bank:						
Deposit with Interest at 3% p.a. to the 31. 12. 45 ..				631	12	11
United Building Society:						
Fixed Deposit for twelve months	437	1	9			
Interest at 3% p.a. accrued ..	5	17	9			
				442	19	6
Savings Bank Account with Interest at 2% p.a. accrued				294	15	0
S.A. Permanent Mutual Building Society:						
Fixed Deposit for 12 months	354	11	4			
Interest at 3% p.a. accrued ..	7	3	2			
				361	14	6
Fixed Deposit for twelve months	655	12	4			
Interest at 3% p.a. accrued	8	16	7			
				664	8	11
Wild Flowers Protection Section:						
Fixed Deposit with the S.A. Permanent Building Society for twelve months at Interest of 3% p.a. £219 11 11						
Interest accrued 5 4 5						
	224	16	4			
Fixed Deposit with the S.A. Permanent Building Society for twelve months at Interest of 3% p.a. 100 0 0						
Interest accrued 2 12 3						
	102	12	3			
Cash at the Standard Bank of S.A. on Current Account	137	16	9			
				465	5	4
General Account:						
Cash at Standard Bank of S.A.	213	17	11			
Cash in hand		19	9			
Mathews' "S.A. Plants" Stock on hand at cost ..	6	12	0			
				221	9	8
				£3,082	5	10

INCOME and EXPENDITURE ACCOUNT for the 12 months ending the 31st December, 1945.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Expenses	9 11 10		By Subscriptions:		
Less: Charged to W.F.P. Section	3 10 8		Family Members ..	216 14 0	
		6 1 2	Ordinary Members ..	938 5 6	
„ Honorarium to the Secretary and Treasurer		126 0 0	Associate Members ..	148 11 1	
„ Bank Charges		5 13 10			1,303 10 7
„ Stationery, Printing, etc. ..		46 18 9	„ Interest from Investments ..		68 16 5
„ Postages and Receipts ..		15 9 11	„ Sales of Journals		3 5 6
„ Gathering at Kirstenbosch ..		5 1 0	„ Sales of Mathews' "S.A. Plants"		2 0 6
„ Donation to the S.A. Red Cross	20 0 0				
Less: Donations received	11 6 3				
		8 13 9			
„ Journal Part XXX (1944) printing, etc.	149 16 8				
Less: Received from Advertisements	35 0 0				
	114 16 8				
„ Journal Part XXXI (1945) Advance Payment ..	5 15 0				
		120 11 8			
„ Surplus for the year 1945 ..		1,043 2 11			
		£1,377 13 0			£1,377 13 0

I have examined the Books, Accounts and Vouchers of the Society for the year ended 31st December, 1945, and have obtained all the information and explanations I have required. I have satisfied myself of the existence of securities. Proper Books and Accounts have been kept. In my opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of my knowledge, the explanations given to me, and as shewn by the Books of the Society.

Cape Town,
13th February, 1946.

CECIL J. SIBBETT, *Chairman.*
L. A. SOLOMON, *Treasurer.*

R. M. JOUBERT,
Chartered Accountant (S.A.),
Incorporated Accountant.

New Members of the Botanical Society.
1945.

(LIFE MEMBERS: FAMILY MEMBERS: Ordinary Members: *Associates.*)

The star (*) indicates Members who are also Subscribers to the Karoo Garden.
The cross (†) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccuracy in the following list it is requested that notification should be made to the Hon. Secretary, P.O. Box 267, Cape Town.

A.

African Explosives & Chemical Industries
Allinson-Sayer, W.
Ancoats, Rev W.
*†ARCHER, C.
Ayris, S. F.

B.

Barclay, Miss E.
Beechner Hobbs, Mrs. L.
Behr, C.
*Bellon, S.
Blackburn, Miss G.
Bland, Dr. B.
Blomfield Mrs. C.
Bosman, A.
Bravermann, S.
BRUCE, J. A.
*†Brunt, Major J. W.
*†Brunt, Mrs. J. W.
Bunn, H. N.
Burmeister, Miss V.
Byron, Mrs. M. A.

C.

Canning, C. S.
Clarke, Mrs. W.
Clarkson, T. E.
Coetzee, Miss M.
Collingwood, F. H.
Cooke, C. K.
Cooper, Mrs.
Coulter, G. H.
Cowin, Miss S.
*†Crompton, E.
Cudmore, A. S.

D.

Daffis, Mrs. B. D.
*Damant. H. A.
Davies, V. C.
Davis, Adv. A., K.C.
De Castilla, Mrs.
Dekenah, J.
de Villiers, C. H. A.
de Wet, H. C.
D'haenens, Mrs. B.
Diamantes de Angola
DIOCESAN COLLEGE, THE
Dundas, The Hon. Sir Charles.
du Plessis, Mej. A. C.
Durrant, Mrs. B. J.

E.

Eliasov, Mrs. H.
*†Eliovson, E.
*Ellis, F. C. P.
Elton, R.
EVERETT, MRS. C. W.

F.

*Fearon, Mrs. M. T.
*Feilmann, E.
*Fileman, C.
Fincken, Mrs. R. V. P.
Fouche, L. J.

G.

Gabie, Miss J.
Gilmore, W. P.
GIRIDLIAN, J. N.
Gohl, C.
*Graaff Reinet Municipality
Grant, Miss M. H.
GRANT, O.
Grapes, D. P.
Gray, Mrs. E. H.
Greeff, Dr. H.
Grogan, Lt. Col. E. S.

H.

Hands, Miss M. E. M.
†Harraway, H. G.
*HARTLEY, H. N.
Hartshorn, Mrs. M. A.
Heid, G.
Heller, B.
*Henderson, M. R.
*†Higgerty, J. W.
*†Hignett, Mrs. A.
HILL, H. R.
*Hinman, B.
Hislop, Miss L. A.
Hochfelden, L. W.
†HUSSERL, DR. H.

J.

Jacobson, Miss E.
James, R. A.
Jardine, Mrs. B. L.
Jemmett, J. L.
Jex, Miss B.
*Juta, Lt. Col., H. C.

K.

*Kaller, Dr. K.
Kerkham, F.
*†Kingsmead College
K Trading Co.
Krause, Mrs. M. E.

L.

Laschin, K. M.
Lazarus, Miss A. J.
Lewis, Miss G. J.
Liebenberg, M. H. C.
Lucas, Mrs. R. J.
Lucke, Mrs. R. B.
Luke, F. R.
Lurie, A.

M.

Malherbe, Mrs. I.
May, W. B.
*McCall, Mrs. A. G.
Macfarlane, Miss C. S.
Meyer-Rousseau, E.
Michelson, Mrs. A.
Milton, Mrs. P. C.
*Moore, Mrs. A.
Morley, Miss D. C.
Morton, Mrs. C. B.

N.

NEAME, MRS. MARY
*†Nel, P. M.
Nicholson, H. B.
Nicholson, J. H.

P.

*Parker, The Hon. J. S.
*Pearce, Mrs. C. A. N.
Pearson, P. P.
Pfeiffer, Miss A. E. J.
Pfeiffer, Mrs. G.
Pichanick, Mrs. I.
PIETERMARITZBURG PARKS DEPT.
*†Pillman, Mrs. H.
Pinkerton, Mrs. F. C.
Pope, Miss O.
Prillewitz, Lt. O. J.
Primich, Mrs. E. E.

Q.

Queenstown Municipality

R.

Read, E. J.
Reed, R. A.
Reitz, Miss C. H.
Rivers, L. R.
Robertson, Miss A. E.
Rudenberg, Mrs. E.
Ruxton, Mrs. D.
Rycroft, H. B.

S.

*Sabor, F. J.
*Sampson, B. J.
Schiller, R.
Searle, Mrs. C. St. L.
Shiell, Mrs. R. L.
†Smuts, M. A.
*†Spilhaus, L.
*†Spilhaus, Mrs. M.
Stapleton, C. C.
Starke, Mrs. H. C.
*Steele, Mrs. M.
Stewart, Mrs. E. M.
Strey, R. G.
*Sutton, Miss E. A.
Syer's Nurseries
Syfret, Miss D. M.

T.

Tayler, Miss E. M. C.
Thamae, A.
Thompson, Miss M.
Thurburn, Mrs. L.

V.

Valpy, J. W.
*Vintcent, Mrs. A.

W.

Webster, Mrs. M. V.
Weinberg, Dr. N.
*Wells, Dr. W. M.
WEZENBEEK, F.
WHITE, PROF. L. W. T.
WHITE, M.
Whitehouse, A.
Willet, F. J.
Willis, T. P.
Woodhouse, Mrs. P.
*Woodward, Mrs. D. M.
Wooler, Mrs. H. D.
Wostenholme, Mrs. P.
Wynne, Mrs. W. S.

Y.

Young, H. O.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

OBJECTS:

(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch, and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(c) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

FOUNDED JUNE 10th, 1913.

President:
W. DUNCAN BAXTER, Esq.

Vice-Presidents:
PROFESSOR R. H. COMPTON; DR. D. BENNIE HEWAT; F. W. METELERKAMP, ESQ.

Chairman of Council: C. J. SIBBETT, Esq.

Hon. Secretary and Treasurer: L. A. SOLOMON, ESQ.

Council:

Professor R. S. Adamson.
Mrs. F. Bolus.
Mrs. H. Burton.
C. H. Clayton, Esq.
Dr. E. L. Gill.
C. R. Gohl, Esq.
F. A. C. Guthrie, Esq.
Miss M. E. Johns.
Miss G. J. Lewis.
Mrs. G. W. Lyon.
Miss K. Murray.
N. S. Pillans, Esq.
H. Porter, Esq.
C. J. Sibbett, Esq.
H. C. Starke, Esq.
Miss E. L. Stephens.
Captain C. Struben.
Chief Justice E. F. Watermeyer.
W. C. West, Esq.
Dr. C. L. Wicht.

Terms of Membership:

Life Members, subscribing not less than £25.

Family Members, subscribing not less than £2 2s. per annum.

Ordinary Members, subscribing not less than £1 1s. per annum.

Associate Members, subscribing not less than 5s. per annum.

Associate Members enjoy all the privileges of Membership except that they do not vote at any of the Society's Meetings. New Associate Members are residents of the Union only.

Honorary Members may be elected at a Meeting of the Society on the nomination of the Council.

All members have the privilege of sharing in the free distribution of surplus seeds from Kirstenbosch, on application to the Director of the Gardens. The Journal of the Botanical Society, published annually, is sent free to every Member. The Journal of South African Botany can be purchased by Members at reduced rates.

Life, Family, Ordinary and Associate Members who wish to support the Wild Flower Protection section of the Society may give an annual subscription of 5s. per annum in addition to the subscription for the class to which they belong.

Life, Family, and Ordinary Members may pay an additional subscription of 10s. per annum, the proceeds of which will support the Karoo Garden, Worcester: such Members have the further privilege of receiving seeds from Worcester as well as from Kirstenbosch. (This privilege is temporarily suspended.)

Those wishing to become Members of the Society are invited to communicate with Mr. L. A. SOLOMON, *Hon. Secretary*, P.O. Box 267, Cape Town.

NATIONAL BOTANIC GARDENS.

PUBLICATIONS ON SALE AT KIRSTENBOSCH.

The following may be obtained by application, enclosing payment, to Director, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

REPRINTS.

(From Journal of the Botanical Society, South African Journal of Science, etc.)

"Cape Annuals for the Garden"; F. W. Thorns. (Dimorphotheca, Felicia, Ursinia, etc. 1 plate.)	3d.
"Cultivation of Bulbs from the Winter Rainfall Area of the Cape"; F. W. Thorns. (Babiana, Sparaxis, Lachenalias, etc., etc.)	3d.
Report on Veld Conservation. (By the Botanical Society, with Government's comments. How to reduce veld burning.)	3d.
"Proteaceae in Cultivation"; F. W. Thorns. (How to propagate and grow Proteas, Leucospermums, etc. 1 plate.)	3d.
"Economic Plants at Kirstenbosch"; F. W. Thorns. (Lavender, Mint, Sumach, Pyrethrum, etc. 1 plate.)	3d.
"Growing Plants from Seeds"; S. G. Fiedler. (How to grow Succulents. 2 plates.)	6d.
"Key to the Native Trees and Tree-shrubs of Kirstenbosch"; by Mrs. L. Bolus. (How to identify them. 2 plates.)	6d.
"The Heaths of the Cape Peninsula"; R. H. Compton. (With key for identification.)	3d.
"The Eastward View from Table Mountain"; Drawing by M. M. Page. (Folding Panorama of the Mountains from Hangklip to the Winterhoeks with names of the peaks.)	1/-
"Buchu"; R. H. Compton and J. W. Mathews. (Advice on growing, drying and marketing.) English or Afrikaans.	6d.
"Drought in the South-West Cape"; R. H. Compton. (Cape Vegetation in relation to dry summers.)	2d.
Colour Plate of Kirstenbosch Pond and Mountain, unmounted.	3d.
" " " " " " " mounted on card, with notice of Botanical Society and cord for hanging.	6d.
Colour Plate of Spheroid Mesems. (Drawings of several species of Conophytum by Beatrice Carter.)	3d.
"The Cultivation of non-succulent South African Plants" (78 pp.); J. W. Mathews. (The only book on the subject: valuable in connexion with the Gardens seed-lists.)	2/-
"The Genus Oxalis in South Africa"; T. M. Salter. (355 pages, 10 plates, 73 text-figures).	35/-
The Journal of South African Botany; Vols. I-XI: each volume in four quarterly parts; per part, 6/6; per volume, 20/-. (To Members of the Botanical Society, 5/- and 15/- respectively). Continuing.	
Annual Reports of the National Botanic Gardens, 1913-1945, each year.	3d.

JOURNAL OF THE BOTANICAL SOCIETY: BACK NUMBERS.

The following Parts are obtainable at the prices shown. The principal contents are mentioned below: each Part also contains full-size Plates, News and Notes, Reports, etc.

(A) Price to Members of the Botanical Society 1/6; to non-Members 2/6:—

Part	VIII.	South African Geraniaceae.	L. Bolus.
		The Cultivation of Geraniaceae.	J. W. Mathews.
		Medicinal and Aromatic Plants in S. Africa.	R. H. Compton.
		South African Heaths.	L. Bolus.
		The Cultivation of Heaths.	J. W. Mathews.
,,	XIII.	Notes on Mesembrianthemum and Allied Genera.	L. Bolus.
		South African Succulents.	J. W. Mathews.
		Alien Trees at Kirstenbosch.	R. S. Adamson.
,,	XXI.	Nature Conservation.	E. J. Dommisse.
		Aloe Marlothii, Some Forms and Hybrids.	G. W. Reynolds.
		Lawn Grasses on Trial at Kirstenbosch.	J. W. Mathews.
		How to Form a Garden Library.	L. B. Creasey.
		From New York to Kirstenbosch and Back.	S. V. Coombs.
		South African Conifers for Garden Use.	J. W. Mathews.
,,	XXII.	An Old Cape Frontier.	E. A. Walker.
		Kirstenbosch: Some First Impressions.	F. W. Thorns.
		Our Wild Flowers. Why drastic measures should be taken for their protection.	F. Guthrie.
,,	XXIII.	Economic Plants at Kirstenbosch.	F. W. Thorns.
		Garden Gladioli — Their Origin and History.	L. B. Creasey.
		Growing Plants from Seeds.	S. G. Fiedler.
		Letters from an Early Cape Botanist.	M. C. Karsten.
,,	XXIV.	(Silver Jubilee Number.) Kirstenbosch. (Broadcast 9th Sept., 1938.)	R. H. Compton.
		Nature Study at Kirstenbosch.	M. E. Johns.
,,	XXVII.	Weeds: The "New" Cape Flora.	R. S. Adamson.
		Drug Plants.	F. W. Thorns.
,,	XXVIII.	The Herbarium of the National Botanic Gardens, Kirstenbosch.	R. H. Compton.
		Nature Study in the Forest at Kirstenbosch.	M. E. Johns.
,,	XXIX.	Notes on some Species of Encephalartos cultivated at Kirstenbosch.	M. R. Henderson.
		South African Proteaceae in Cultivation.	F. W. Thorns.
,,	XXX.	Cultivation of Bulbs from the Winter Rainfall Area of the Cape.	F. W. Thorns.
		Report on the Silver Leaf Tree Borer.	F. G. C. Tooke.
		The Magic of the Cycad Forest.	F. Milner.
		Report of the Sub-Committee on Veld Conservation, August, 1944.	
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		A Plea for South African Trees.	D. R. D'Ewes.

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		Local Nature Reserves.	R. H. Compton.
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THE JOURNAL OF THE

BOTANICAL SOCIETY

OF SOUTH AFRICA

Edited by R. H. COMPTON
M.A., F.R.S.S.Af., Director of the
NATIONAL BOTANIC GARDENS

Part XXXII. 1946

KIRSTENBOSCH,
NEWLANDS, C.P.
SOUTH AFRICA.

Published under the authority of the Council of the Botanical Society

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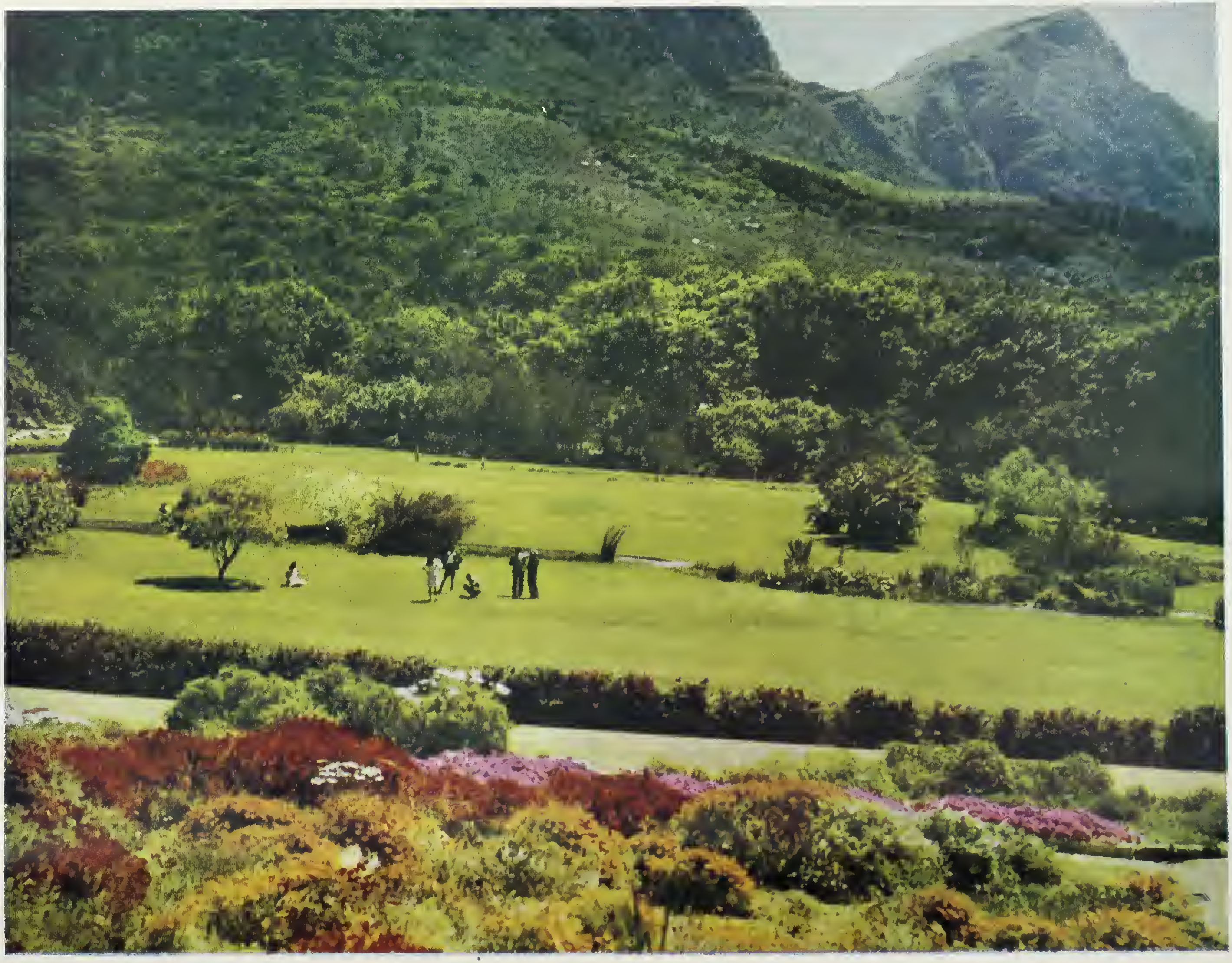

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PLATE I. The Lawn at Kirstenbosch.

Photo: J. P. de Smidt

The Journal of the Botanical Society of South Africa.

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PART XXXII 1946

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News and Notes

THEIR MAJESTIES the King and Queen and Their Royal Highnesses Princess Elizabeth and Princess Margaret Rose paid an informal visit to Kirstenbosch on the first day after their landing in Cape Town. The visit was unexpected, no special preparations had been made and there was no publicity, so that the Royal Party, who were accompanied by the Prime Minister, Field Marshal the Rt. Hon. J. C. Smuts, were able to see the Garden in its normal condition. They also exhibited special interest in a Nature Study class of school children which was in progress at the time.

* * * * *

On their last day in South Africa prior to embarkation the Royal Party ascended Table Mountain and there bade farewell, as it were, to the land which had been their home for three months and which lay spread magnificently before them. The morning was a superb one, the view was immense, mountains 130 miles away being clearly visible, and the sense of freedom, informality and exhilaration which comes from the high places clearly possessed the visitors: the happy incidents which took place gave one more proof of the natural human qualities of the Royal Family which had won all hearts in South Africa.

* * * * *

During the progress of the Royal Tour indigenous flowers grown at Kirstenbosch were supplied by the Gardens on many occasions—for the Royal Train, for decoration at Government House and Westbrooke and for presentation bouquets.

* * * * *

Last year, in view of the serious financial position of Kirstenbosch, the Council of the Botanical Society issued a special appeal to Members for additional support: they were asked to secure new Members and to increase their own subscriptions if possible. It is a pleasure to be able to report a very encouraging response to this appeal. The total membership increased by about 300, and many Members subscribed on a higher grade than they had previously done. The result up to the present is that an increase of about one-third in the Society's grant to the Trustees of the Gardens is payable this year. (£1,366 as compared with £1,043 last year.)

Members were informed that the Trustees were also applying to the governmental authorities for additional support in view of the increase in the cost of maintaining and the need for developing the Gardens. The result has been increases of £1,000 in the Union Government's grant, £250 from the Cape Town City Council, and £125 from the Cape Provincial Council.

These increases, welcome and encouraging as they are, do not entirely solve the Trustees' financial problem. The Gardens estimates for 1947 and subsequent years show a considerable excess of expenditure over income, which can only be made good by drawing on reserve funds—for a very limited period. The Council therefore continues its appeal to Members to give still further assistance through the Society. Though many have already responded, the majority of Members have not yet done so: to these the Council addresses itself again. The Botanical Society is the backbone of the Gardens, not only financially but in the moral support it provides and the evidence it gives of public appreciation of their work. The Trustees rely on the backing of the Society to reinforce their claim for adequate national and local assistance.

* * * * *

Good progress has been made in the establishment of the Karoo Garden at its new site near Worcester. The whole area of 36 morgen has been fenced, a water supply provided from the municipal mains, a storage reservoir and a workshed built, and the main drive laid out. The shade house from Whitehill has been reconstructed. The succulent plants have been removed from Whitehill and replanted. A large number of Aloes and Euphorbias were presented by Messrs. Hurling & Neil of Bonnie Vale, and a valuable collection of succulents was purchased from Mr. M. Malherbe of Worcester. All these have been planted and are settling into their new positions in a very encouraging way. A house for the Curator is about to be built by the Public Works Department. Much remains to be done, but a very promising start has been made and there is no doubt that the new Karoo

Garden will be a most interesting institution and a great asset to Worcester.

* * * * *

The Botanical Society has resolved, at the last Annual General Meeting, after due notice, to make a change in its constitution to admit of support being given to the new Karoo Garden. The following are the alterations to the Constitution as printed. (See this Journal, Part XXV, 1939, p. 10.)

To substitute the word *Worcester* in the place of *Whitehill* in Clauses 2, 4 and 12.

To add, in the second paragraph of Clause 12 after the word *Kirstenbosch*, the words *"or at any other Gardens established by the Trustees."*

The second of these alterations now permits the Council of the Society to make capital grants from the Life Members' Fund to the Karoo Garden, Worcester, as well as to Kirstenbosch.

Another alteration to the Constitution of the Society was made at the same time in connexion with life membership, as follows:—

To add in Clause 4 after sub-section (e):—

Family and Ordinary Members who have paid or from time to time shall have paid subscriptions for a period of not less than 20 years shall thereafter upon application be entitled to be enrolled as Life Members upon payment of a subscription of £10.

* * * * *

The Wild Flowers Protection Committee of the Botanical Society secured a promise from the Police that, when the force was up to strength, special officers would be appointed for the duty of enforcing the relevant Ordinances. In the meantime the Committee has appointed its own officer, Mr. H. D. W. Meyer, an experienced ex-sergeant of police in the Cape Peninsula, to report cases of infringement of the Ordinances. A considerable number of instances of hawking and sale of protected wild flowers have been brought into court by Mr. Meyer, and convictions were secured in a large percentage of the cases. The trade is a profitable one: the *purchase* of protected flowers is no offence in law: the sellers use much cunning and guile in carrying on a business which commonly begins with trespass and theft: and difficulties abound in bringing them to book. But progress is being made and the result of the Committee's work can only be salutary.

The Schedule of Protected Species has been revised by the Wild Flowers Protection Committee at the request of the Cape Provincial Administration, and the new Schedule was promulgated by Proclamation No. 52 of 1947. It is greatly simplified in form and covers both sale and plucking. In framing it the Committee had the benefit of advice from correspondents in other districts of the Cape Province.

* * * * *

Negotiations are in progress with regard to the publication of the "Flowers of the South-West Cape," consisting of nearly 300 colour plates drawn by Mrs. E. Garrett Rice for a Committee of the Botanical Society. No finality has yet been reached, however, owing to post-war publishing difficulties and the enormous increase in costs, and it is impossible at present to say when this keenly anticipated work will actually be published.

* * * * *

Any Member who happens to possess a spare copy of Part III (1917) of the Journal of the Botanical Society will be doing a service to the libraries of the Gardens and of the University of Cape Town if he will kindly send it to the Director, Kirstenbosch.

* * * * *

Kirstenbosch bids farewell with regret to Mr. Frank W. Thorns, the Curator, who has been appointed to the post of Director of the Durban Parks, Recreation and Beaches Department.

Mr. Thorns succeeded Mr. J. W. Mathews, the first Curator of the Gardens, on his retirement in May 1936. Mr. Mathews had seen the Gardens through the dark days of the first world war and carried out the development which took place in the succeeding years of peace. Mr. Thorns had the even more difficult task of maintenance during the second world war, and it is a matter for regret that he will not enjoy the years of expansion which must surely lie ahead. He takes with him the gratitude of all concerned for the progress that has been made at Kirstenbosch during the past eleven years and the many general and detailed improvements which he has carried out. His responsible post will be difficult to fill worthily.

* * * * *

The garden staff at Kirstenbosch is receiving a noteworthy addition to its strength through the appointment of Mr. H. Hall who has resigned from the post of Curator of the important succulent collection at Alexandra Park, Manchester, in order to take up a post here. Mr. Hall has the reputation of being one of the foremost cultivators of succulents in greenhouse conditions in England: he will find greatly increased interest in South Africa, the home of succulents par excellence, and in dealing with the problem of growing them in the open air.

* * * * *

There is now a regular and improved motor omnibus service from the Terminus in Lower Plein Street to Kirstenbosch, via the Main Road and Newlands Avenue. Double-decker buses are now working on the route and about seventeen trips are run daily. On Sundays the same service operates, and in addition buses run every hour via de Waal Drive. The Cape Town Tramways (2-3321) will furnish particulars.

* * * * *

Parking problems at Kirstenbosch have been bad enough in the past: in the coming season they will undoubtedly be accentuated and short-tempered motorists will certainly be voluble in their complaints about the smallness and irregularity of the parking area. The privilege of parking in the Gardens has grown from the small beginnings before their foundation when venturesome drivers would come and take tea on Sundays at the little shack, long since demolished, at the top of what is now called the "new area." There is actually hardly any other great Botanic Garden in the world in which motorists enjoy this privilege: nor can they hope to do so indefinitely at Kirstenbosch, the central area they now occupy being obviously destined for incorporation in the Gardens lay-out. The parking area oaks, one by one, are falling victims to old age and disease, and must eventually be replaced by South African subjects which will not produce the barren surface on which cars now find a place.

* * * * *

The Edward Muspratt Solly Scholarship, tenable at Kirstenbosch, was vacant in 1946. Miss E. J. Cross, B.Sc., of Rhodes University College, Grahamstown, was elected Scholar for 1947, and has been engaged in herbarium work and systematic study.

The value of the Scholarship, £100 per annum, was sufficient before the war to attract candidates who wished to spend a year or two in practical study and research at the end of their University careers and before taking up regular posts. Owing to the severe fall in the value of money, however, this can hardly be expected in future, and many potential candidates are now attracted by well-paid appointments which they can enter immediately after graduation. The Scholarship will need supplementation if it is to regain its former usefulness.

* * * * *

There is increased activity in the Nature Study Classes at Kirstenbosch. During the War Miss M. E. Johns carried on the work single-handed (except in 1944 when Miss E. Dunt was seconded from the Wynberg Boys Junior School): but in March, 1946, she was again joined by Miss Marie Thesen, who had been serving in the South African Medical Nursing Service since 1940. Considerably larger numbers of school children have been attending the classes: during the first two terms of 1947 the numbers have been 2,071 and 2,217, as compared with 1,516 and 1,855 in 1946. The improvement in the bus services has made it much easier for many classes to visit the Gardens. Matriculation students have also been using the Gardens more than before, and are making ecological studies of the forest, the ponds and streams and the open hillsides. Two additional non-European schools also attended classes at Kirstenbosch.

Both teachers and taught are to be congratulated on the extended use that is being made of Kirstenbosch for purposes of Nature Study, a truly educational subject which should figure much more largely in school activities.

* * * * *

The South African Association for the Advancement of Science has undertaken the publication of a monthly periodical, "South African Science," which will largely take the place of the bulky annual volume issued up to the present, and will present current news and up-to-date information in a form suitable for the intelligent reader. The first number, published in August, 1947, makes a good impression, and one hopes that this progressive action on the part of the S2A3, as it is familiarly called, will be well supported. Members receive the periodical gratis, and it is open for subscription at 15/- per annum (Box 6894, Johannesburg).

Another scientific journal which has begun publication in 1947 is "Progress: Science in South Africa." This is issued as a supplement to Libertas, without additional charge, and is expected to appear every two months at first, and perhaps monthly later. It has two audiences, according to the editorial foreword: the professional scientists and the amateurs of science, the ordinary men and women who realise that the applications of scientific knowledge have shaped the world in which we live. The first issue, published in May, justifies this dual aim.

* * * * *

"The first book ever to be illustrated with full-colour pictures in third dimension" has been received at Kirstenbosch through the kindness of Mr. Rupert Leach of the American Consulate, London, who himself took the 140 pictures which accompany the book. The pictures are viewed through a very neat and inexpensive form of stereoscope called a "Viewmaster," and this together with the reels is supplied by Sawyers', of Portland, Oregon, U.S.A. The book is entitled "Succulent Plants" and is written by Mr. W. Taylor Marshall, well known as an authority on the subject, both from the botanical and the horticultural points of view. The pictures themselves are of very great beauty and give an almost lifelike presentation of the plants.

In addition to the Succulents series other botanical subjects have been produced—Alpine wild flowers of Western America, fungi, etc., and also a large range of scenic and geographical subjects. The Viewmaster costs only two dollars in the U.S.A., and the reels, each with seven subjects, only one dollar for three, so that this method of presentation may become of much educational value: its recreational usefulness is even more evident.

* * * * *

We call Members' attention to the possibility of purchasing back numbers of this Journal, as well as a number of reprints of articles which have appeared in it and in other publications. These were offered last year at low prices and there has been a demand which has exhausted or reduced stocks of several items. A list of those still obtainable is published at the end of this Journal.

* * * * *

The Aircraft Operating Co. of South Africa Ltd. has published a leaflet, obtainable on request, containing two pages of typescript and four air photographs, entitled "Air Survey: its value in soil and veld conservation." A correspondent points out that these air photographs show with remarkable clarity much of what is implied by the difficult to define, if popular, term conservation: and indicate how valuable a tool they provide for the planning of veld and nature reserves, public parks and gardens.

It will be remembered that an air photograph of Kirstenbosch, with a key, was included in the last issue of this Journal.

* * * * *

We have great pleasure in calling the attention of Members of the Botanical Society to the renaissance which has taken place in the Wild Life Protection Society of South Africa (Box 1742, Johannesburg). The outward and visible sign of this is an admirable and copiously illustrated quarterly called "African Wild Life," the official magazine of the Society, which is sent gratis to its members or can be bought at bookstalls, etc., at 2/6 per copy.

A leaflet about the Society is enclosed with this Journal, and we should like to urge those with an interest in the preservation of this country's animals and plants to join the Society and so strengthen it in its vitally important programme. The forces of destruction, brutal or insidious, are ever present: the Wild Life Protection Society stands for conservation of what is most beautiful and distinctive in this land of ours, its incomparable fauna and flora.

* * * * *

Another Society which we are glad to welcome is the Arboricultural Society which has made an energetic start in Johannesburg. This is devoted to the "cause" of trees or shrubs, whether grown for timber, ornament, fruit or shade. The Society has contributed to this Journal an interesting article which fully explains its principles and aims: and a leaflet is enclosed with particulars as to subscription rates, etc. There is probably nobody on earth who needs trees more and knows less about them than the "average South African." The efforts of the Arboricultural Society, which has come into existence in one of the Union's darkest corners from the tree point of view, should be warmly applauded and encouraged.

In this favoured area of the South Western Cape trees in variety are more familiar: but who can say that we know enough about them or use them enough? There is controversy enough about street planting—an almost hopeless proposition if it was never thought of and allowed for in the original town plans—and there is neglect or monotony in country planting. The Forest Departments are doing what they can: private owners and the smaller municipalities could do much more. More knowledge is required, and a contribution in this direction is included in this Journal in the shape of an article by Mr. F. W. Thorns on trees grown at Kirstenbosch.

* * * * *

The Arboricultural Society has been fortunate in receiving a grant of 500 acres of land near Roodepoort for the purpose of establishing an Arboretum. The donors are the Central Mining and Investment Corporation Ltd.

* * * * *

Since the end of the war building activity has manifested itself on the borders of Kirstenbosch, and soon the Gardens will be hemmed in on their long eastern boundary by suburban development. Times have changed considerably since the foundation of Kirstenbosch, only 34 years ago, when it was regarded as very much in the back-of-beyond. As civilisation advances nearer to the fringes of the Gardens and the Kirstenbosch Nature Reserve they gain enhanced value by contrast: and we have more and more reason to bless the far-sighted action of Rhodes in securing the preservation of this unique area to posterity, and of the promoters of the Gardens for putting it to so grand a purpose.

* * * * *

Similar credit must be accorded to the Cape Divisional Council in acquiring the southern extremity of the Cape Peninsula as the Cape of Good Hope Nature Reserve, and in so actively following the policy of adding to the area first proclaimed, so that almost the whole ground south of the Plateau Road from Smitswinkel Bay to Scarborough now falls under the Council's control. This highly romantic and beautiful Reserve, with its rich flora and its possibilities of re-establishment of fauna, has now been saved from the very real threat of exploitation by the speculative builder. The Reserve has experienced—and is still suffering from—great difficulties in management resulting from the war, and various unexpected problems have arisen: it is sincerely to be hoped that the Council will solve them in a way which will make the Reserve a real asset to the community and a place of interest, recreation and enjoyment for all sections of the people.

Conservation is the watchword in the face of the rapid and devastating suburbanisation of the fringes of our cities. Ronde Vlei in the Cape Flats is being threatened as a bird sanctuary by the development that is taking place all round: its bird life is quite remarkable, as testified by every authority on the subject. It is definitely to be left untouched by the new Cape Flats drainage scheme which will involve the neighbouring Zeekoe Vlei. Something more than mere paper regulations and notice-boards is required. Will not the Divisional Council appoint a Warden and guards so that this precious area may not degenerate into the weary waste of scruffiness which seems to be the destiny of so much that once was a fair land?

* * * * *

The demand for a more scientific approach to the question of National Parks and Nature Reserves resulted in the calling of a conference by the Hon. the Minister of Lands in Pretoria in November. During the course of the discussion, it became clear that none of the bodies controlling the various Parks and Reserves would willingly abandon its authority, so that any centralisation of control was out of the question. Some nervousness was also expressed as to the policy of including "scientific" members on the various boards: this not being surprising in view of the widespread horror which is felt at recent examples of game destruction for so-called "scientific" reasons. The conference finally resolved in favour of the establishment of a Scientific Advisory Council for National Parks and Nature Reserves, and a constitution has been drawn up: it now rests with the Minister of Lands to bring this Council into being. There are many important matters which await its consideration.

* * * * *

The Soil Conservation Act has led to the establishment of several Conservation Areas in various parts of the Union, and it is safe to assume that their number will increase: whether they will be able to deal with the chief rural problem—that is the recalcitrant and individualistic farmer who seeks his own limited advantage at the expense of the rest of the district—remains to be seen. In the Western Province in particular the short-sighted interests of the mountain grazier, which lead him to destroy the vegetative cover of the mountains all too frequently by fire, run directly counter to those of the valley-cultivator and irrigator whose lands, dams and streams are steadily being reduced in value as a result of mountain burning. It is quite obvious which type of farming is of the greater value to the country as a whole: the problem is to make the mountain burner see it in that way.

To take a specific example: the capacity of the Olifants River dam above Clanwilliam is being reduced at an alarming rate by the volumes of sand brought down by the river from its mountain catchments which are constantly being devastated by fire for the sake of the grazing or through sheer carelessness. As the Royal Society report said: "Pasturing on the steep, acid mountain lands of the Cape is barely profitable and invariably leads to destruction of vegetation and serious erosion." Can the community, now represented by local conservation boards, check this flagrant evil, or is expropriation of the mountain burner the only remedy?

* * * * *

The belief is commonly held that mountain-side plantations of exotic trees, especially eucalypts and pines, cause diminution in the flow of streams and springs below them. Like so many other beliefs this does not appear to rest on a secure scientific foundation, and other factors such as mountain fires, variations in rainfall, etc., must be taken into account. The whole question is engaging the attention of the Forest Department, and direct experimental studies have been under way (especially by Dr. C. L. Wicht at Jonkershoek) for several years. In the meantime, however, the Director of Forestry has invited any persons having evidence bearing on the relations between plantations and stream flow to bring it to his notice.

There can be little doubt that a well preserved cover of indigenous vegetation is the best security for streams (as well as a preservative of soil erosion and all its disastrous consequences): but at the same time the country needs timber, and the problem is therefore to determine where plantations should be located with a view to the greatest possible production of timber and the least possible injury to water supply. The question of the relative rates of transpiration (i.e. the absorption and giving off of water) by various types of vegetation has been studied by Dr. M. Henrici, who has recently published a series of reports: but their reliability has been called in question, and in any case they are far from giving a clear answer to the practical problem. The whole question is intimately bound up with the proper conservational management of the mountain vegetation—for which the Forest Department is the principal trustee at present. What is definitely needed is more scientific data and guidance—and then the will and the ability to follow that guidance in the interests of the country.

* * * * *

Last year, as reported in this Journal, the prospects for the establishment of a Nature Reserve in the Gonubie Springs area, near East London, were very encouraging. Unfortunately the scheme has come to nothing, neither the Divisional Council nor the City Council being willing to undertake the responsibility. Thus one more opportunity is being missed, this time by a community which might have been expected to be alive to the importance of such things and of the ultimate value, locally and generally, of setting aside for permanent preservation an area of great beauty and natural interest. It is understood that destruction of trees and maltreatment of the area is now in progress and East London is going to be a poorer and less interesting place in consequence of its lack of imagination and enterprise in this matter.

* * * * *

Near Durban, on the other hand, there is good reason to hope that a nature reserve will be established. Mr. K. L. Stainbank, the owner of the Coelmore Estate is offering to Natal Province, subject to certain simple conditions, about 300 acres of unspoiled bush lands teeming with birds and buck. Mr. Stainbank has refused tempting offers by land speculators, preferring to hand it over to the Province as a gift provided it is to remain a wild life sanctuary. The area is within sight of Durban and would be a wonderful asset to the city and the province. Let us hope that Natal will seize the opportunity which East London is apparently letting slip.

* * * * *

The information in the above paragraph is taken from the Bulletin of the newly-established and energetic Natal Society for the Preservation of Wild Life and Natural Resorts. Other subjects dealt with in this Bulletin include, of course, the policy of game destruction as a counter-measure against the nagana cattle disease. The Honorary Secretary writes: "We have every reason to believe the highest authorities will act shortly either in stopping the slaughter or appoint an impartial commission to enquire into the wanton and proved useless slaughter in Zululand." As the South African Association for the Advancement of Science recently pointed out in most definite terms, in view of the officially reported success of new methods of tackling the tsetse fly, there is now no excuse whatever for the continuance of the official attack on game. And the Science Association is not alone in its protests, similar ones having come from all over the Union.

* * * * *

The hint dropped by the Deputy Mayor of Cape Town that the Municipality was proposing to construct a motor road to the top of Table Mountin called forth immediate opposition from all sides. The prospect that the Mountain would become one more resort of the beanfeaster, the bottle-smasher, the litter-lout and the general destroyer and polluter, so often identifiable with a certain type of motorist, was sufficient to arouse the indignation of all those who regard the Mountain with love and reverence: not only as the special pride and glory of Cape Town but as a sacred trust to be preserved unsullied and unspoilt, a majestic monument of nature as well as the abode of peace and loneliness, a place of stern reality and the home of dreams and inspiration, the scene of the finest sport on earth and the home of a flora of unexcelled beauty and interest. The Mountain Club called a conference to discuss the proposal, and the opposition to the motor road was unanimous. The coup de grâce was administered by General Smuts himself who spoke in no uncertain terms in condemnation of the scheme at the Mountain Club's annual dinner, and the motor-road project may be regarded as dead—for the moment.

* * * * *

Actually encroachments of all kinds are continually being made and threatened on the Mountain—cable-station, high level roads, weeds such as pines and hakeas, plantations, vegetable gardens, and so on, to say nothing of the constant menace of fire and the resulting establishment of disfiguring protective measures in the shape of broad fire belts. The problem is how can Table Mountain continue to exist in anything resembling a natural condition in the grip of the aggressive encirclement of a rapidly growing city. There should be some organisation whose duty would be to co-ordinate the activities of the various authorities responsible for the Mountain and to exercise control over every proposed piece of "development": and even if its functions could be only advisory it would surely be an improvement on the present state of affairs. We understand that the Town Planning Association has made the suggestion that a Mountain Association be established on somewhat parallel lines, and the idea is assured of earnest and, we hope, fruitful consideration.

* * * * *

Rondebosch Common is a public area close to Cape Town whose preservation is so strictly defined in its original deeds that encroachment, "development" and other destructive forms of exploitation are almost impossible. Strange though it may seem to many who take such things for granted, it has a remarkable flora of its own which is the joy of botanists and nature-lovers. A correspondent has sent the following poem which expresses something of its wealth in a form which the Editor, usually a captious critic of such things, finds unusually pleasing.

FLOWER CATALOGUE, RONDEBOSCH COMMON, SPRINGTIME.

Tired of the trimness and the artificial picture
Garden and thoroughfare compose in the suburbs,
Gladly we hasten to the rendezvous of nature.

Here are the flowers such as the earliest explorers
Saw in the days of van der Stel and old van Riebeek,
Carpets of all colours are displayed for our enjoyment.

Six-pointed stars as though descended from the zenith
Twinkling coruscate like the jewels they resemble,
Yellow and magenta, and lavender, and azure.

Humbly they nestle very closely to their mother
Gazing in ecstacy of wonder at the sunshine,
Faithfully mirroring the colours of the spectrum.

Lest we should find all these colours were too dazzling,
Many are cream-coloured or immaculately snowy,
Raising their heads aloft and swaying with the breezes.

Botterblom is pale but underneath are lines of purple,
Daisies in their myriads are foaming on the Common,
Oxalis is bright as gold or purple-red in masses.

PLATE II. The late Dr. D. Bennie Hewat.

Drosera, the sundews, with their sticky leaves catch insects;
There in the spongy ground where stand the pools of water
Bright unpolluted lilies nod to their reflections.

Flax-blue and fairylike is the graceful heliophila,
Like all the others, it will revel in the sunshine,
Opening its petals to the warmth and to the sunlight.

Yellow nemesias, though tiny and quite fragile,
Bravely unfold themselves and challenge the South-Easter,
Sturdily resisting his attempts to overthrow them.

Far from the city in the Wagonmakers Valley
Grow the kalkoentjies with their vegetable plumage;
But for us it's needless to search afar for beauty:

Here on our doorsteps, almost, just across the asphalt,
Stepping through grassy paths there are no miles to travel;
Straight from the city streets transported we can wander.

Thanks to the foresight of our early city fathers,
Men who have left for us this paradise of nature,
Gladdening our hearts, as we, rejoicing in the springtime,
Freely and gratefully appreciate its wonders.

E.D.W.B.

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Dr. David Bennie Hewat, one of the best-known and most public-spirited citizens of Cape Town, was intimately connected with the National Botanic Gardens and the Botanical Society until his death in 1946. He was a member of the Society for thirty years. In 1925 he was elected a member of the Council and became a Vice-President in 1944, after nearly twenty years' constant devotion to its interests. His enthusiastic support of the work of Kirstenbosch and Whitehill was recognised by his appointment in 1941 as one of the Union Government's representatives on the Board of Trustees of the National Botanic Gardens in place of the late Rt. Hon. Sir James Rose-Innes. He was a moving spirit in securing the foundation of a Karoo Garden at Whitehill in 1921, and when the move to Worcester was discussed in 1945 he took an active and most useful part in the negotiations which led to its successful re-establishment. He was keenly interested in the protection of the flora, and was a member of the Society's Wild Flower Protection Committee from its establishment in 1941. His influence was uniformly enlightened, generous-minded and stimulating, and he will long be remembered with gratitude among those who have loved and worked for the Gardens.

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The late Mr. F. W. Metelerkamp, Magistrate and Justice of the Peace, joined the Botanical Society in 1933 and immediately campaigned for increased membership, meeting with much success. This was recognised by his appointment to the Council next year. Only three years later he was elected Chairman of the Council, in succession to Sir Lionel Phillips, and in 1944 he became a Vice-President. He was keenly interested in the protection of the flora, and took a leading part in discussions with the Cape Provincial authorities on that subject. When the Botanical Society established its Wild Flowers Protection Committee in 1939 he became its Chairman, resigning on account of ill-health in 1943. He was an enthusiastic grower of Cape bulbs, and presented a fine collection of these to Kirstenbosch in 1926, followed by a considerable number of succulents in 1929.

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In the death of Miss Edith Barclay, Kirstenbosch has lost a true friend. For many years Miss Barclay paid regular visits to the Gardens with her pupils whom she inspired with her love for and keen appreciation of the beautiful. Shortly before her death she produced with Miss Christine Guard an illustrated brochure entitled "Kirstenbosch Calling." Her lovable disposition and warm interest in the Gardens are greatly missed by her Kirstenbosch friends.

* * * * *

The recent death of Dr. John Muir deprives us of one who made notable contributions to our knowledge of the South African flora. Working mainly in the districts of Albertinia and Riversdale, among the richest plant areas of the Cape coastal belt, he amassed much valuable herbarium material and laid useful foundations for subsequent plant geographical studies. His chief publications were "The Vegetation of the Riversdale Area" 1929, and "The Seed Drift of South Africa" 1937, both published as Memoirs of the Botanical Survey.

Members of the Botanical Society will recall the account of his pioneer studies on South African beach drift which was published in this Journal, Part XVIII, 1932—an article on botanical "beachcombing" which opened many people's eyes to one of the most fascinating and unexpected aspects of a walk along our shores.

Dr. Muir's name is commemorated in the genus Muiria, perhaps the most extraordinary of all the Mesembryeae, a photograph of which in its natural surroundings appeared in this Journal, Part XIII, 1927.

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No one can fail to recognise the debt which South African systematic botany owes to the "amateur" and semi-professional botanist. Usually the professional botanist, who depends on his work for his livelihood, is so much occupied with teaching and administration that his field investigations are absurdly limited. The man who is able to devote himself to field botany and the working up of his results in herbarium and garden by virtue of his independent means is fortunate indeed and is often regarded with envy by his routine-ridden professional colleagues.

* * * * *

Miss M. Wilman, who has just retired from the post of Director of the McGregor Memorial Museum, Kimberley, has recently published a valuable addition to the small number of local floras of the Union. It is entitled "Preliminary Check List of the Flowering Plants and Ferns of Griqualand West," and is published by the Museum at Kimberley (and Deighton Bell, Cambridge) at 45/- nett. It is actually intermediate between a check-list (or mere catalogue of plant-names) and a true flora including descriptions of the plants. The names are given and notes are added in each case as to habitats, localities, frequency, etc., as well as common names (of which a surprising number exist) and local uses: the preserved specimens in the Kimberley Museum and other herbaria are also cited. The area covered includes portions of adjoining divisions, and an admirable farm map, drawn by Mr. J. P. H. Acocks, is included as a key to the various localities mentioned. (Incidentally, in order to baulk the rapacity of collectors, commercially minded and otherwise, no localities are given for such plants as the various species of Lithops.) We congratulate Miss Wilman on this useful and interesting work which should be emulated in other districts: and we wish her happiness in her retirement.

Mr. R. A. H. Flugge-de Smidt has placed flower-lovers and botanists under a debt of gratitude for his book of 48 of his own photographs and three colour drawings entitled "Flowers by the Roadside" (Johannesburg 1947). Accompanying the pictures are interesting notes on the plants and their habitats, features and names. Sir Ernest Oppenheimer contributes a charming foreword. The title is rather a misnomer, as most of the plants concerned are somewhat recherché and would shun the roadside: in the case of *Orothamnus Zeyheri,* the Marsh Rose, Mr. Flugge-de Smidt had to walk and climb for 5½ hours to reach the subject of his photographs. Many orchids and asclepiads are represented in the book, as well as several bulbous plants and parasites. The author has kindly allowed two of his plates to be reproduced in this Journal. The book is being sold for the benefit of the S.A. Red Cross Society.

* * * * *

In the 1939 volume of the Journal of South African Botany Miss M. C. Karsten published the beginning of a series of articles on Carl Peter Thunberg, whose travels in the Cape in 1772-1775 may be regarded as laying the foundation stone of South African systematic botany. The series was interrupted by the War, during which Miss Karsten was living in Holland; she has now come back to South Africa and the concluding sections of her work on Thunberg have been published in the Journal of South African Botany, Vol. XII, Part IV, October 1946. Miss Karsten is at present in a temporary post in the Botanical Department, Rhodes University College, Grahamstown. She has a book in preparation on the Dutch East India Company's Garden in Cape Town.

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The Journal of South African Botany, published at Kirstenbosch, has completed its twelfth annual volume. Publication was continued during the War, though paper restrictions necessitated a reduction in its size. It is now hoped to restore the Journal to its normal size of at least 200 pages, with plates. The cost of printing has increased to approximately double what it was at the beginning of the War, and ways and means of meeting this without increasing the subscription have had to be devised. The Trustees of the Gardens have increased their subsidy to the Journal, and authors have been asked—most regrettably—to assist in the publication of their papers in cases where funds are available for the purpose.

Meanwhile at 20/- per volume the Journal is one of the least expensive of scientific publications: and even this modest subscription rate is reduced in the case of Members of the Botanical Society who can obtain it at 15/- per volume.

* * * * *

Among the many new species described in the twelfth volume of the Journal of South African Botany may be mentioned two or three which have been collected within a few yards of main roads in the much-frequented and well-botanised area of the South Western Cape. There are, for instance, *Metalasia xanthocephala* Salter and *Marasmodes undulata* Compton, both growing on the gravelly flats just outside Paarl (on land now undergoing "industrial development"): both are rather inconspicuous, small Composite shrubs. *Hypertelis trachysperma* Adamson grows on the well-trodden margin of Zeekoe Vlei near Muizenberg, and *Rafnia ericifolia* Salter close to the old Cape Town-Paarl road at Hercules Pillar. Other novelties come from more remote localities and their discovery has involved arduous climbing in the Cape mountains: but the examples mentioned are indications of the fact that the flora of South Africa, and even that of the South Western Cape itself, is by no means fully known.

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Captain T. M. Salter, the author of the fine monograph "The Genus Oxalis in South Africa," which was printed almost entirely at his own expense, and who waived the proceeds of its sale in favour of the Gardens, has added to their indebtedness by presenting a complete authenticated set of his specimens of Oxalis to the Kirstenbosch Herbarium. The specimens are of exceptional quality and of great importance for students of the genus. The collection forms a notable addition to the wealth of material and records that is steadily accumulating in the Kirstenbosch Herbarium.

South African Trees and Shrubs at Kirstenbosch.

By F. W. THORNS.

DURING the thirty-two years that the Kirstenbosch Gardens have been in existence one of the less spectacular developments has been the steady building up of a collection of indigenous trees and shrubs. The work has been slow, due in part to the demands in other directions, and also for the reason that while almost anyone will collect bulbs or succulents very few persons will collect seeds of trees and shrubs, and when we ourselves are collecting in new districts we are only able to gather from plants which happen to have ripe seeds at that particular moment. Many of the early Kirstenbosch plantings were from established plants donated by nurserymen and private growers, but the great majority, particularly of those planted during the past ten years, have been raised here from seeds collected in the wild.

There are now more than eighty species of indigenous trees well established in the Gardens, with many others recently planted or awaiting planting. For the purpose of these notes "trees" are defined as being large woody plants which normally should have one clearly defined trunk, but it must be remembered that most species which normally produce a central trunk without low branches when forest grown, will become less tree-like and nearer an overgrown shrub if planted in the open and untrained. There are also locally indigenous tree species growing here that are older than the Gardens, which being regrowths from stumps left by bygone woodcutters, have several main stems arising from ground level.

It sometimes seems that plants, like prophets, are without honour in their own country, and the fact that a particular species "grows wild" is often sufficient reason for dismissing it altogether as an unsuitable garden subject. The fact remains that indigenous trees are seldom chosen by garden planners, and although various reasons are advanced for this, the writer suggests that the real one is that these native trees cannot be purchased from the average nursery. Without wishing to detract in any way from the value of many of the beautiful exotic trees which adorn our South African gardens, one cannot help feeling that a tremendous number of trees are produced and planted for one virtue only; that they are of rapid growth.

The list of trees which follow are of species which have done well at Kirstenbosch, and are recommended for planting in gardens. Unless otherwise mentioned, the method of propagation is by seeds, as although it is possible to propagate many tree species from cuttings, it is rare that a well shaped, properly grown tree can be raised by this means. Unfortunately we are not able to distribute seeds of very many tree species. Tree seeds, with the exception of some hard-seeded legumes, lose their viability rapidly in store, and must be sown as soon as possible after collection. Many species, too, do not yet produce fertile seeds here, either through being self-sterile or by reason of their youth.

TREES.

Calodendron capense, "Cape Chestnut," a beautiful lilac flowered tree that grows in open forest from Swellendam to Natal and in Tropical Africa. Reaches 30′ or more under conditions of good soil and moisture. Does not thrive too well at Kirstenbosch in the open, and possibly needs the shelter of other trees. Very susceptible to attack by scale insects.

Calpurnia lasiogyne, a small tree from Natal, with yellow pea-like flowers in pendent inflorescences.

Celtis rhamnifolia, "Camdeboo Stinkwood," is one of our few deciduous trees. Grows up to 40′ under suitable conditions and makes an excellent tree for summer shade, rather similar to an Elm tree. Raised from seeds which must be sown while still fresh. It is found in forest country over a wide area in South Africa.

Cunonia capensis, the "Rooi Els" of the Western Province, will grow only along streamsides or under very moist conditions. It is a very attractive tree, especially when young, with pinnate leaves and cream coloured erect flower spikes. It is indigenous to Kirstenbosch, and has not been propagated here.

Ekebergia capensis, the "Essenwood" of Natal, forms a splendid large shade tree there, but our specimens are still young. It is of fairly rapid growth, but having soft wood will not withstand strong winds. Propagated from freshly gathered seeds.

Erythrina caffra, the well known "Kaffir Boom," is not at home in the Cape, although good flowering specimens are occasionally seen. It needs dry winter conditions to flower well, and at Kirstenbosch is badly worried by the larvae of a moth which enters the terminal buds and burrows into the twigs. Raised from seed, cuttings, or by planting large poles.

Eugenia cordata is known in some Eastern localities as the "Waterboom," and needs streamside or moist conditions. It is evergreen, gives dense shade, and is particularly ornamental when carrying its masses of purplish fruits which are relished by birds. Grown from seeds which must be sown immediately they ripen and never allowed to become dry.

Ficus capensis, or "Cape Fig," usually forms a sprawling tree with several trunks, but can be trained as a conventional tree with a single stem. It is deciduous but does not remain long without its leaves. Ornamental reddish fruits, about the size of golf balls, are borne in quantity on the trunk and older branches. Propagated from seeds or large cuttings.

Gardenia Rothmannia, a small tree from Swellendam and further east, bears large single cream-coloured flowers with purple spotted throat.

Gardenia Thunbergia, also a small tree when well and fully grown, but more often seen as a large shrub. The flowers are large, single, and pure white, and are borne at intervals during the summer months.

Harpephyllum caffrum, the "Kaffir Plum" of Natal and the Eastern Province, is another quick-growing soft-wooded shade tree that is easily damaged by strong winds. Propagated from fresh seeds.

Ilex mitis, known as "Cape Holly," grows by streamsides in many forest areas of the Union. Two very large specimens shade the small Bath at Kirstenbosch. Small white flowers are borne in profusion, followed by bright red berries similar to but smaller than the English holly. Apparently some trees bear male flowers, others female, and a few bear perfect flowers.

Millettia caffra, from Natal, is a very ornamental small tree bearing striking purple flowers in summer followed by large velvety-brown pods. The wood is hard and used by natives for their "Umzimbiti" sticks.

Nuxia floribunda is another medium-sized tree from the Knysna district. Its individual flowers are minute but are borne in foamy cream-coloured masses that envelop the whole tree in winter. Propagated from seeds which are very fine, and need careful handling.

Olinia cymosa grows into a magnificent large tree in the Cape forests, but does not appear to thrive so well in the open. It is evergreen and bears whitish flowers in tight little sprays. Occasionally one sees individual trees loaded with reddish fruits, in which condition the tree presents an extremely ornamental picture.

Pittosporum viridiflorum, a South African relative of the New Zealand species commonly planted for hedges, is an attractive small tree with bright green shining leaves. Flowers are creamy-white, strongly and deliciously scented, and are followed by small ornamental dehiscent fruits.

Podocarpus falcatus, the "Outeniqua Yellowwood," has grown faster than other yellowwoods at Kirstenbosch. This species can easily be trained into an upright pyramidal tree by shortening or removing low branches that tend to rob the leader. It is a good subject for avenues. Propagated from freshly gathered seeds.

Rhus viminalis. This is a drought resistant small tree that loses most of its leaves in late winter at Kirstenbosch and reclothes itself with brilliant green foliage in early spring, resembling, as its name implies, a willow. By removing low branches it can be shaped into a single-stemmed tree, but left to itself in the open it tends to develop a bushy habit.

Trichilia emetica, a large tree from the Natal coast, is slow growing at Kirstenbosch, but promises to become a delightful shade tree with its wide-spreading crown of shining green leaves. Flowers are white, scented, and borne in clusters.

Virgilia divaricata. This is the tree of "Keurbooms River" and is a truly delightful, quick-growing, flowering tree. It has an upright habit, and bears its pinkish scented flowers in spring. It will flower at two years old, and reach a height of 30′ in less than ten years, but does not usually live longer than twelve years.

Virgilia oroboides is the "Keurboom" of the Peninsula, and although of rapid growth is longer lived than the preceding species, some individuals becoming really large-boled trees. It has flowers of a paler pink than its cousin, although both species produce variants from the normal shades. It is also scented, but flowers mainly in late summer.

Widdringtonia Schwarzii, the Willowmore Cypress, is a promising conifer of cypress-like habit for dry conditions. It is of fairly rapid growth, but is possibly not a long-lived species, the seventeen years old Kirstenbosch trees already showing signs of diminishing vigour.

Indigenous shrubs are very well represented at Kirstenbosch, although the term "shrub" embraces such a number of species with widely divergent habits that for these notes we must deal only with the larger reasonably hard-wooded shrubs which normally exceed a height of four feet. There are about two hundred and fifty species established at Kirstenbosch which fall into this class, many of them highly desirable garden plants, and a selection is listed below. The Protea and Erica families are not included, having been dealt with before, and the numerous species of dwarf or soft-wooded shrubs are also left out as these must be treated as a separate division.

SHRUBS.

Acokanthera spectabilis, a shrub with stiff, dark-coloured leaves and clusters of small, white, scented flowers followed by purplish plum-like fruits. The plant has a milky sap and is poisonous. It comes from the Eastern coastal districts, and will not survive much frost. Grown from seed.

Acridocarpus natalitius is a sprawling shrub of semi-scandent habit with yellow flowers, native to Natal and rather tender. Propagated by seeds.

Adenandra fragrans is related to the "Buchus," its leaves having a pleasant aniseed-like scent. It bears numerous bright pink star-like flowers. Grown from seeds.

Adhatoda Duvernoia, an erect quick-growing white-flowered shrub with rather soft wood. Raised from seeds.

Alberta magna. This is a magnificent orange-scarlet-flowered shrub from Pondoland. It continues to flower at intervals and as it also develops brightly-coloured calyx lobes is seldom without colour. Our plants were grown from seed collected in the wild, but seeds from these plants are rarely fertile. Can be layered, and most probably would grow readily from cuttings with artificial heat.

Bauhinia Galpinii is a really decorative scandent shrub that can be grown as a large bush or trained to cover a fence or screen. It is of rapid growth once established, and will stand cutting hard back to the ground in winter if necessary. Its terra-cotta-coloured flowers are freely produced in late summer. Raised from seeds.

Bolusanthus speciosus is very slow growing at the Cape, as coming from Zululand district it prefers higher temperatures. It has blue-purple pendulous inflorescences rather like small Wistaria blossoms.

Bowkeria cymosa, a rampant sprawler, is useful for filling up backgrounds where the soil is moist. It bears masses of small whitish flowers resembling miniature calceolarias.

Brunia albiflora has soft pine-like foliage and bears large flat heads of rounded white flowers. *B.Stokoei* is a very attractive red-flowered species needing moister conditions. Both are raised from seeds, but the latter species does not apparently produce many fertile seeds in cultivation.

Buddleia auriculata var. euryfolia forms a dense suckering shrub. The flowers are yellowish and very sweet scented. Propagated from cuttings or suckers.

Burchellia bubalina, from Eastern coastal regions, bears clusters of red tubular flowers in summer. Grown from seeds or cuttings.

Carissa grandiflora, the spiny "Amatungula" of Natal, has pure white-scented flowers and edible fruits. It makes an excellent hedge plant, and is easily raised from seed.

Cassia didymobotrya grows easily and rapidly from seeds under moist conditions, but is a short lived plant. It has large, dark green leaves and large, deep yellow flowers in erect spikes.

Clerodendron myricoides is a blue-flowered shrub of light habit that is easily grown from cuttings.

Coleonema pulchra, another aromatic relative of the "Buchu" group, can be used for hedges. It has an erect broom-like habit, with ericoid foliage and numerous small pink flowers. Propagated by seeds.

Cyclopia tenuifolia, a "Bush Tea" from Swellendam, is most ornamental with bright golden flowers set off by bright green foliage. It is easily raised from seeds, but not long lived. A moist position is necessary for this plant.

Dais cotinifolia. This plant when well grown is one of the most attractive of our flowering shrubs. It forms a large neat bush, and bears a profusion of pink flower heads. Native to the higher parts of inland Natal, it will stand a certain amount of frost. Propagated from seeds, which are only sparsely produced at Kirstenbosch, or by suckers.

Dombeya Dregeana is often a small tree in nature, but under garden conditions usually adopts a shrubby habit. The pendent white flowers are freely produced. Grown from cuttings.

Erythrina Humei, a dwarf "Kaffirboom" from the Drakensberg area, is a beautiful scarlet-flowered shrub that should be more widely grown. Propagated from seeds, but these are difficult to procure owing to weevil infestations.

Gardenia globosa, from Eastern coastal bush, carries masses of single, scented, somewhat campanulate flowers that vary in colour and size on different plants, usually cream with spotted centres. Easily grown from seeds.

Greyia Sutherlandii, the "Natal Bottlebrush," can be grown from seeds or cuttings. Its red flowers are described in the common name. *G.Flanaganii* and *G.Radlkoferi* are other decorative species.

Hypericum leucoptychodes needs a streamside or moist situation. It has large clear shining yellow flowers. *H.Roeperianum* is a large leaved species that will thrive under comparatively dry conditions. Grows from seeds or cuttings.

Iboza riparia, common in Eastern open bush, is softwooded, but attains a large size. In dry winter areas these plants flower without leaves, the numerous mauve-white flowers having a misty look. In the Cape the plants retain their leaves, unless defoliated by red spider attacks, which often happens. Grows readily from cuttings.

Indigofera cylindrica is a pink-flowered, soft-leaved bushy shrub, of fairly rapid growth, for moist areas.

Liparia sphaerica is only just large enough to come into a list of this nature, but is such an attractive shrub that it cannot be excluded. The orange-yellow flowers are borne in compact spherical heads about the size of a medium orange. Although native to Table Mountain it has not been cultivated to any extent at Kirstenbosch, and probably not at all elsewhere in this country. It is grown from seeds, but these are extremely difficult to obtain owing to the prevalence of weevils.

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TO MEMBERS OF

The Botanical Society of South Africa.

We wish to express our appreciation and thanks to Members of the Society and their friends for their generous response to the Special Appeal that we made last year for increased support of the National Botanic Gardens, Kirstenbosch. As the result of this appeal many Members increased their subscriptions and a considerable number of new Members were enrolled, as is shown in the Annual Report of the Society embodied in this issue of the Journal.

We would, however, like to emphasise that, in spite of larger grants by the Government and other public bodies and the Society's increased contribution, the Gardens are still in need of additional funds for their proper maintenance and development in view of the higher cost of salaries, wages, materials, etc. and we earnestly suggest that each Member of the Society should endeavour to obtain at least one new Member, for which purpose is enclosed a form of application for membership of the Society containing details of subscription rates, etc. We would add that in making this appeal we feel that there are many people in the Union and elsewhere interested in the Gardens and in Botany generally who would like to subscribe but have never been approached to do so.

We commend this appeal to your earnest consideration.

W. DUNCAN BAXTER, *President.*
CECIL J. SIBBETT, *Chairman of Council.*
R. H. COMPTON, *Director of National Botanic Gardens.*

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Mackaya bella, from Zululand forest, is best grown in semi-shade with summer moisture. It will survive in open situations, but becomes bunchy and compact and so loses its attractiveness. The mauve flowers are borne on slender branching stems. Propagated by seeds or cuttings.

Mundtia spinosa belongs to the coastbelt dunes and is suitable for open sandy situations. It is an ericoid shrub with small purplish flowers followed by yellowish-red edible fruits.

Mundulea suberosa varies in form, the best being an erect growing type which reaches ten feet or more. Some forms remain dwarf and spreading. The mauve pea flowers are well set off by grey pinnate leaves.

Nymania capensis must be included, as its rosy-coloured inflated fruits are so spectacular and unusual, but it is not altogether amenable to cultivation, and rarely survives long. A firm roothold in a bank of rocks seems to be the best position for this plant, which is readily raised from seeds.

Pavetta lanceolata, from Natal, has very strongly sweet-scented white flowers in corymbs. Has been propagated from seeds and cuttings.

Peddiea africana, from the Eastern Cape, is a neat erect shrub. The flowers, which are tubular and borne in clusters, are of an unusual greenish shade.

Podalyria calyptrata is indigenous to Table Mountain, and is one of the best flowering shrubs one could wish to see. The flowers, somewhat similar to solitary sweet pea blossoms, come in varying shades of mauve and lilac and are sweet scented. When growing wild in masses, as they do after mountain fires, they make a never-to-be-forgotten picture. Easily grown from seed.

Psychotria capensis, an Eastern shrub for shady places, has large shining leaves, greenish flowers, and ornamental reddish berries.

Rhigozum obovatum comes from the Karoo and is very resistant to drought. It has a somewhat virgate habit and bears pale yellow flowers.

Sparmannia africana, from Southern coastal forests, is a very large-leaved shrub with white flowers. Although it will grow almost anywhere, it is best when given semi-shade and moisture and some protection from wind.

Vernonia podocoma, a strong growing soft-wooded shrub from the Transvaal low veldt, carries large feathery heads of mauve flowers, in autumn, that resemble giant Ageratum blossoms. Our seeds are apparently infertile and we grow the plants from cuttings.

The trees and shrubs listed above are growing at Kirstenbosch, with an average annual rainfall of about fifty-five inches, almost all of which falls in winter between May and November. No frosts occur but it is known that many of the species will withstand a few degrees of frost. The locally indigenous species are remarkably resistant to summer drought, but those from Eastern forest districts will not thrive unless some water is available during summer.

Their propagation presents no serious difficulties. Gardeners may be surprised to read that the seed method is used for so many of the shrubs, as it is well known that many of these plants have been propagated from cuttings overseas, but our experience is that, without artificially heated propagating frames, it is more satisfactory to rely on seeds. We have, of course, no reason for large-scale propagation as in the case of a sales nursery.

For small quantities of seeds we use six-inch plant pots filled with a light friable soil, not too finely sifted. The seeds are lightly covered but not firmly pressed, as air must be allowed to reach the germinating seeds. There is some reason to believe that certain seeds will germinate more readily if simply placed on the surface of the soil and covered with moss. Moisture and shade, with some protection from drying winds, are essential for success, but cold, wet, stagnant must be avoided.

The period between sowing and germinating varies considerably according to the species and conditions. Soft seeds usually germinate quickly, but hard leguminous seeds may lie for months unless treated in some manner that will crack or soften the hard coat and allow the ingress of water. There are many methods of accomplishing this end, including soaking in weak acids, chipping, exposing to dry heat, etc., but we have found that the pouring of boiling water over the seeds, and leaving overnight to soak, gives best results, and that lengthy soaking in shallow dishes of cold water is also effective.

Once germination has taken place the young seedlings must be moved by stages to the full light, but not to direct sunshine, and eventually transplanted into single small pots or tins. It is usually fatal to attempt transplanting while the young plants are in a soft delicate condition, and in most cases wisest to postpone this work until the wood has become fairly hard, which will be when the seedlings are from two to four months old according to species.

The time of year for sowing is not as important as the conditions to be provided for the seed pots. Seeds which do not keep must in any case be sown as soon as procured. With others it is wise to sow at the beginning of the warm season in order that a long growing period will be available for the plants before the first winter.

Young trees and shrubs may be planted into permanent positions while still small, but in the case of trees it is recommended that they be grown on in tins under nursery conditions, for a year or two, in order that the grower may be enabled to train them and lay the foundations for the future plants. Trees should be encouraged to grow a straight main stem by shortening or removing any lateral branches that tend to rob or replace the lead, and it will repay the grower to examine all young trees periodically for this purpose, and so avoid the necessity for heavy pruning later on in the tree's life. Shrubs require less care in their early stages, but can be made into balanced plants by topping any overstrong growths and afterwards given such annual pruning as is dictated by circumstances and by the nature of the species.

In no circumstances must trees be allowed to remain in small tins long enough to become dwarfed or stunted. Once this has happened they will be handicapped for many years, and some species so treated will never completely recover. If for any reason it is impossible to plant out young trees when they have attained the desired size, they should be given fresh soil and a slightly larger receptacle at the commencement of the next growing season.

Trees for To-morrow.

By THE ARBORICULTURAL SOCIETY OF SOUTH AFRICA.

A LAND without trees can be likened to a world without music; and trees apart from their beauty and the impression they make in man's mind, of peace and contentment, help provide the soil with that fertility which we all demand from it.

Large stretches of South Africa are today treeless, and it is a moot point how much of this is due to human interference, and how much to the fact that the wide-spread plains are incapable of supporting more than grass and small shrubs without human assistance. Away from the coastal belt, the fringes of the mountains and the bushveld, almost all the trees have been planted by man and are, practically without exception, exotics. The fact that trees can be persuaded to grow only with the greatest difficulty in certain regions and that, in spite of these difficulties, are indeed planted and cared for, indicates how vital they are to the life of the country and of every individual in it.

Apart from all their economic uses, trees play an important role in our lives as shade and shelter trees and as ornaments in the landscape. There is urgent need for more planting of trees by all sections of the community, and it is to stimulate an interest in tree-planting, among other things, that the Arboricultural Society of South Africa has recently been formed. There are other organizations which have done and are doing valuable work in that direction such as the Union Government Department of Forestry and Division of Soil Conservation, the Agricultural and Land Services Clubs, Municipalities, etc., but this new society intends to appeal to the private home gardener and farmer, and is concerned more with shade and ornamental trees than with those grown for timber or for checking soil erosion, although it appreciates the necessity for these and will do all it can to assist these other bodies.

To discourage vandalism in any form is another aim of the society, and how often do we see trees mutilated or destroyed, either by intent or accident, thus further depriving the country still more of its already too few trees.

The society began in a small way with a group of people who felt sure that there was a need in this country for a society similar to the "Men of the Trees" with which it is affiliated. That they were not wrong is borne out by the enormous interest displayed in the movement by people in all walks

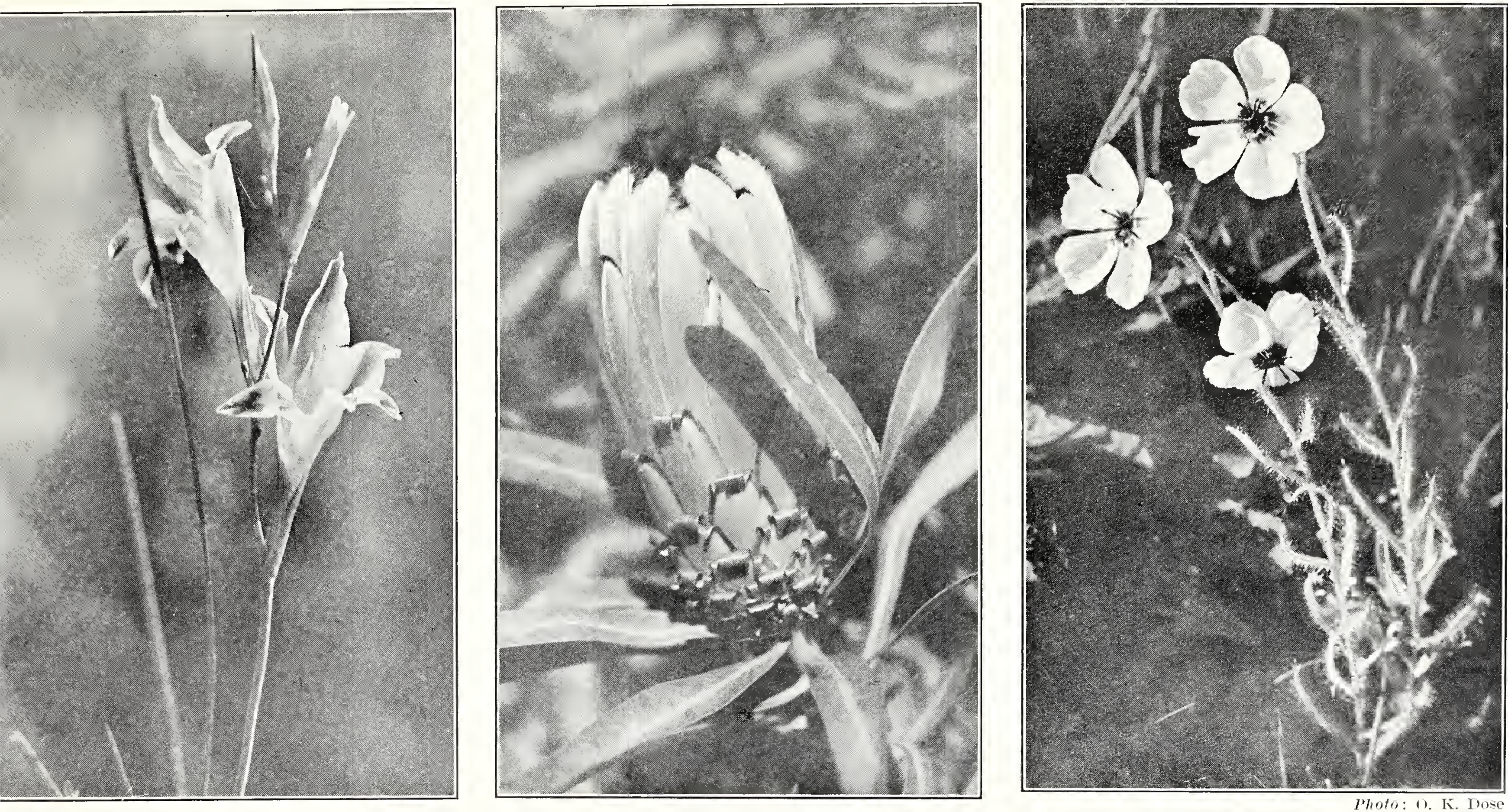

Photo: O. K. Dose

Gladiolus tenellus. *Protea neriifolia.* *Drosera cistiflora.*

PLATE III. Three Cape Wild Flowers.

Mystacidium filicorne.

Listrostachys arcuata. *Photo*: R. A. H Flugge-de Smidt

PLATE IV. Two "Flowers by the Roadside".

of life and from all parts of the country. Even from South West Africa and Rhodesia have come enthusiastic letters and membership subscriptions. Today, after being in existence only a few months, the society has over one hundred and fifty members with more joining daily.

South Africans are becoming more, shall we say, " tree-conscious," for want of a better word, and there is an increasing desire for information about trees. People realize that tree-planting alone is not sufficient, that it is important that the right species be chosen for their purpose, for their climatic and soil conditions and that, once the trees have been planted, they should give them the necessary care. To meet this demand, the society has a body of experts to advise and assist the public in all their tree problems.

In addition the society will build up a reference library of books about trees: their nomenclature and culture; their place in life and legend; their historical and geographical significance; the story of the discovery and introduction of exotics, etc. While we are deeply indebted to the Department of Forestry for the work they have published, there is still very little literature on South African aspects of these subjects. A further function of the society will be, then, to collect and in due course publish information about trees in this country. Here each individual member can assist by sending in results of his own experiences.

Book learning alone is not enough. To understand and appreciate trees, it is necessary to study the living tree, to learn the feel of its bark and the texture of its leaves, the colour of its flowers and the pattern of its branches against the sky. To this end, the society arranges visits to local gardens and other places of interest so that members can see trees growing, and, at the same time, learn their names, their cultural requirements, their economic importance and anything else of interest about them from one of the society's experts. The first such meeting was held recently and was so well attended that others are likely to be equally successful. One aim of the society is to start an arboretum, but such a project is extremely costly and will depend on the amount of support given, both financial and practical. Perhaps there will arise an Arnold in this country who will make it possible!

Other activities of the society include lectures and demonstrations. In this connection it might be mentioned that the society has received a great deal of encouragement from Professor Phillips of the Botany Department, University of the Witwatersrand, who has accepted office as President and has also offered his services as lecturer at any time.

At its inaugural meeting the society showed two films on trees which were very well received. It plans to show others in the near future, but has so far been unable to obtain any dealing with South African subjects. One day, may be, local cine-camera enthusiasts will turn their attention to the wealth of material in trees and produce a documentary film of trees in South Africa.

The value of indigenous trees and shrubs is appreciated by the society, both as garden subjects and as an integral and fast disappearing part of the South African landscape. It is prepared to assist in protecting our natural forest resources and in encouraging people to cultivate native trees in their gardens. Some of these, such as Bauhinia Galpinii, Calodendron capense, Burchellia capensis, Virgilia capensis, Podalyria species, to mention only a few, are well worth growing although they are rarely seen in gardens.

The importance of the radio as a means of reaching the people is well known, and it is hoped that broadcasts on arboriculture will be arranged, especially for children, who, after all, will benefit more from tree planting to-day than will the present generation of adults. Many people are surprisingly apathetic about this question. If the children can be shown that trees belong to the nation and are of the utmost importance to the well-being and prosperity of everyone, they will be more far-sighted than we are. They will cherish more than we do the wonderful trees already in existence and will plant more for their successors.

The Arboricultural Society of South Africa visualises a South Africa of the future of cities with tree-lined streets and shady parks; of highways with broad belts of trees alongside; of farms with ornamental trees, shelter belts and woodlots; of children's playgrounds that are shaded from the broiling sun and protected from bitter winds; of trees in forests and plantations growing wherever it is possible and practicable. Is it too much to hope for—to work for? We think not, but to do its part in bringing this dream to reality the society needs the co-operation and support of all South Africans.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

ANNUAL REPORT, 1946.

Your Council have pleasure in submitting the Thirty-third Annual Report and Financial Statement of the Society for the year ended the 31st December, 1946.

MEMBERSHIP.—There was a net gain in Membership during the year of 230. This gratifying increase was mainly due to the Special Appeal for additional aid to Kirstenbosch that followed the intimation by the Trustees of the Gardens to the Council that an increased Grant by the Society was very much needed to maintain their work on its past level. This Appeal was made to all Members of the Society in April, 1946, and was reprinted in Part XXXI of the Journal. The actual figures of Membership at the end of 1946 are given below, those in brackets being the corresponding numbers on the 31st December, 1945, viz. :—

Life Members	115	(93)
Family Members	164	(114)
Ordinary Members	1,345	(1,195)
Associate Members	625	(617)
	2,249	(2,019)

FINANCIAL.—As shown by the Accounts annexed hereto, the Grant to Kirstenbosch for the year under review amounted to £1,366 0s. 1d., being an increase of £322 17s. 2d. over that for the previous year. The amount to the credit of the Life Members' Fund at the end of 1946 was £2,040, being £735 greater than at the end of the previous year, this mainly representing the subscriptions of 24 new Life Members, in the majority of cases in response to the Special Appeal in aid of Kirstenbosch. Investments total £3,570 7s. 7d., being £1,174 16s. 9d. more than the figure at the end of 1945.

ELECTION OF OFFICE BEARERS.—At the Annual General Meeting, held on Tuesday, the 2nd of April, 1946, the following Office Bearers were elected :—

President :—Mr. W. Duncan Baxter.

Vice-Presidents :—Professor R. H. Compton, Dr. Bennie Hewat and Mr. F. W. Metelerkamp.

Members of Council :—As the result of a Ballot the following were elected :—

Professor R. S. Adamson, Mrs. H. Burton, Dr. E. L. Gill, Mr. F. A. C. Guthrie, Miss G. J. Lewis, Miss K. Murray, Mr. H. N. Porter, Mr. H. C. Starke, Captain C. Struben, Mr. W. C. West, Dr. C. L. Wicht, Mrs. L. Bolus, Mr. C. H. Clayton, Mr. C. R. Gohl, Miss M. E. Johns, Mrs. G. W. Lyon, Mr. N. S. Pillans, Mr. C. J. Sibbett, Miss E. L. Stephens, Rt. Hon. Mr. Chief-Justice E. F. Watermeyer.

JOURNAL OF THE BOTANICAL SOCIETY.—Part XXXI of the Society's Journal, edited by Professor Compton, was issued to all Members, Learned Societies, etc., during April, 1946. Part XXXII is expected to be ready for issue in April, 1947, and will contain this Report and Accounts.

DISTRIBUTION OF SEEDS.—A supplementary List of Seeds available for distribution to Members was issued by the National Botanic Gardens. A total of 413 parcels, containing 7,220 packets of seeds were despatched from Kirstenbosch (including a few parcels to other Botanic Gardens). The distribution of seed from the Karoo Garden was suspended temporarily owing to the transfer from Whitehill to Worcester. Distribution of seeds was limited to the months March to September, and it is understood that this will be the practice in future.

VISITORS TO KIRSTENBOSCH.—Although no exact record was kept of the number of visitors it has been clear that this has increased markedly during the last year or two, especially during week-ends and not only in the Spring.

KAROO GARDEN.—A sum of £151 4s. was paid to the Trustees of the National Botanic Gardens derived from subscriptions by Members of the Society in support of the Karoo Garden at its new site in Worcester. It is understood that good progress has been made in the development of the Garden and that the cost of maintenance has necessarily increased considerably since its removal from Whitehill.

KIRSTENBOSCH.—The serious lack of funds for the development and maintenance of Kirstenbosch is well known and the Society's appeal for help has been appreciated by the Trustees and Director of the Gardens. It is unthinkable that the Gardens, which are now working with a quite insufficient Staff, should be forced to curtail their work even further as the result of the present financial difficulties. The Society's increased effort, valuable in itself, should be an example to those who control the public funds from which the grants in aid of the Gardens are made.

SOIL CONSERVATION.—The Soil Conservation Act, passed by Parliament during the 1946 Session, is a most important step towards the proper conservation of the indigenous vegetation. It is gratifying to note that some of the principles embodied in the Act were put forward by the Society in the memorandum presented to the Government in 1944. This was printed, together with the comments of the Secretary for Agriculture and Forestry, in Part XXX of the Society's Journal.

ANNUAL GATHERING, 1946.—This was held in the open at Kirstenbosch on Wednesday, the 2nd of October, in good weather and was well attended.

WILD FLOWERS PROTECTION SECTION.—Membership of the Section stands at 324. The Annual Report of the Committee is annexed and will be printed in the next issue (No. XXXII) of the Society's Journal.

OBITUARY.—Your Council desires to express deep regret for the loss that the Society has sustained by the deaths during the year of Dr. Bennie Hewat and Mr. F. W. Metelerkamp, Vice-Presidents of the Society and subscribers since its foundation. Both were for many years Members of Council and of the Wild Flowers Protection Section. Dr. Hewat was also a Trustee at Kirstenbosch and Mr. Metelerkamp was for many years Chairman of the Wild Flowers Protection Committee. Their valuable services to the Society were much appreciated. Included in those other Subscribers whose passing is regretted are Mr. W. A. Eaton, a Life Member and a benefactor of the Society, and Mr. Justice McGregor and Dr. E. B. Fuller, both Members of old standing.

THANKS.—Your Council wish to express their appreciation of the kindness and courtesy of the South African Association for the free use of their Board Room for meetings of Council and the Wild Flowers Protection Committee, and to the Daily Press for their co-operation in reporting the proceedings of the Society.

CECIL J. SIBBETT,
Chairman.

L. A. SOLOMON,
Hon. Secretary and Treasurer.

Report by the Wild Flowers Protection Section Committee for the Year Ending 31st December, 1946.

Four Meetings of the Committee were held during the year.

Illegal Selling of Wild Flowers.—Your Committee has long emphasised the necessity for one or more special police officers to be entrusted with the enforcement of the provisions of the Wild Flowers Protection Ordinances. Eventually the Cape Provincial Administration entered into discussions with the Police with regard to the training and appointment of police officers for this purpose. The Police authorities then expressed themselves as being prepared to assist in every way in the protection of the Cape flora and gave the undertaking that as soon as the Force had been brought up to full strength consideration would be given to the question. Your Committee reminded the Police authorities of this promise towards the end of the year, but were informed that the situation did not as yet allow of definite steps being taken in the matter.

While the Police have shown every willingness to co-operate in cases of infringement, in practice it still devolves upon members of the public to bring such cases to the notice of the Police. Members of the Committee have been active, as far as practicable, in undertaking this work and many prosecutions have resulted, but the position is obviously unsatisfactory and the Ordinances are often and openly defied in consequence.

Revised Schedule of Protected Wild Flowers.—At the request of the Cape Provincial Administration the existing Schedule was revised, the Committee entrusting the work to Professor R. H. Compton and Mr. N. S. Pillans.

The new draft Schedule is a single one and takes the form of a list of the species protected against both selling and plucking. This effects a considerable simplification and it is hoped that the enforcement of the Law may thereby be greatly facilitated.

Administration of Ordinance.—The Committee has had under consideration a number of applications, submitted through the Provincial Secretary, for permits to export wild flowers from the Cape Province and have given their recommendations thereon. They would like to record that in one instance where the Committee strongly recommended to the Provincial Administration that the Registration of a certain Nursery and its Permit to export wild flowers should not be renewed, such recommendation, although supported by the Department of Forests, by the Police and by several persons of responsibility, was not agreed to by the Executive Committee and renewals were granted. A request for an impartial investigation of the matter was refused.

Obituary.—It is with deep regret that reference is made to the great loss that the Society has sustained by the deaths during the year of Dr. Bennie Hewat and Mr. F. W. Metelerkamp, both of whom had for many years past been Members of this Committee and the Council of the Society and had done valuable work on those Bodies. Dr. Hewat was also a Trustee of Kirstenbosch and Mr. Metelerkamp had been Chairman of this Committee over a number of years and had influenced legislation for the protection of our native flora.

General.—The Membership of the Section stands at 324, being a nett gain of 30 during the year. The amount to the credit of the Section as at 31st December, 1946, was £532 10s. 9d., being an increase of £67 5s. 5d. over the figure at the end of 1945.

The following were Members of the Committee at the close of the year:—

Professor R. H. Compton, Chairman; Mrs. L. Bolus, Mrs. H. N. Burton, Mr. C. H. Clayton, Mr. D. R. de Wet, Mr. J. D. Krige, Mr. C. J. Sibbett and Mr. Wm. C. West.

And the following were co-opted by the Committee as Members:—

Dr. L. Gill, Mr. C. R. Göhl, Mrs. G. W. Lyon, Miss K. Murray, Mr. H. N. Porter and Senator M. J. van Breda.

The thanks of the Committee are accorded to the South African Association for the use of their Board Room for Meetings.

R. H. Compton,
Chairman.

L. A. Solomon,
Hon. Secretary and Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

BALANCE SHEET as at 31st DECEMBER, 1946.

		£ s. d.	£ s. d.
Life Members' Fund as at 31.12.45		1,305 0 0	
Received during 1946		735 0 0	
			2,040 0 0
Subscriptions paid in Advance			100 10 6
Subscriptions to the Karoo Garden:			
Balance as at 31.12.45		151 4 0	
Received during 1946		155 19 6	
		307 3 6	
Less: Paid to National Botanic Gardens		151 4 0	
			155 19 6
Subscriptions to the Wild Flower Protection Section:			
Balance as at 31.12.45		465 5 4	
Subscriptions received during 1946		66 16 9	
Interest earned during 1946		9 16 3	
		541 18 4	
Less: 5% of 1946 Subscriptions credited to General Administration Expenses	£3 6 10		
Stationery, Printing, Postages, Bank Charges, etc.	6 0 9		
		9 7 7	
			532 10 9
Bailey-Taylor Show Card Issue: Amount in hand			6 7 7
National Botanic Gardens: Surplus for 1946			1,366 0 1
			£4,201 8 5

		£ s. d.	£ s. d.
Cape of Good Hope Savings Bank: Deposit with Interest at 3% p.a. to the 31.12.46			650 11 6
Post Office Savings Bank—Deposit As at 24.7.46 at Interest of 3% p.a.			600 0 0
United Building Society:			
Fixed Deposit for 12 months		450 4 0	
Interest at 3% p.a. accrued to 31.12.46		6 2 0	
			456 6 0
Savings Bank Account		804 10 11	
Interest at 2% p.a. accrued to 31.12.46		2 0 6	
			806 11 5
S.A. Permanent Mutual Building Society:			
Fixed Deposit for 12 months		365 3 9	
Interest at 3% p.a. accrued to 31.12.46		7 7 7	
			372 11 4
Fixed Deposit for 12 months		675 5 4	
Interest at 3% p.a. accrued to 31.12.46		9 2 0	
			684 7 4
Wild Flower Protection Section:			
Fixed Deposit with S.A. Permanent Building Society	£226 3 4		
Interest at 3% p.a. accrued to 31.12.46	5 7 8		
		231 11 0	
Fixed Deposit with S.A. Permanent Building Society	103 0 0		
Interest at 3% p.a. accrued to 31.12.46	2 13 10		
		105 13 10	
Cash at Standard Bank of S. Africa		195 5 11	
			532 10 9
General Account:			
Cash at Standard Bank of S. Africa		90 5 1	
Sundry Debtors		5 0 0	
Mathews' "S.A. Plants": Stock in hand at cost		3 5 0	
			98 10 1
			£4,201 8 5

INCOME and EXPENDITURE ACCOUNT for the 12 months ended the 31st December, 1946.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Expenses	22 15 4		By Subscriptions:—		
Less: Charged to W.F.P. Section	3 13 3	19 2 1	Family Members	299 7 0	
,, Honorarium to Secretary and Treasurer		126 0 0	Ordinary Members	1,083 17 3	
,, Bank Charges		4 18 0	Associate Members	154 2 0	1,537 6 3
,, Stationery, Printing, etc.		60 14 5	,, Interest from Investments		74 16 9
,, Postages and Receipts		23 1 7	,, Donations		117 17 3
,, Gathering at Kirstenbosch		5 9 1	,, Sales of Journals		3 8 6
,, Journal, Part XXXI (1945) Printing, Wrapping, Postage, etc.	170 11 11		,, Sales of Mathews' "S.A. Plants"		1 14 6
Less: Received from Advertisements	59 0 0	111 11 11			
,, Special Appeal for Members—Circulars, Postage, etc.		18 6 1			
,, Surplus for the year 1946		1,366 0 1			
		£1,735 3 3			£1,735 3 3

I have examined the Books, Accounts and Vouchers of the Society for the year ended 31st December, 1946, and have obtained all the information and explanations I have required. I have satisfied myself of the existence of securities. Proper Books and Accounts have been kept. In my opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of my knowledge, the explanations given to me and as shown by the books of the Society.

(Sgd.) CECIL J. SIBBETT, Chairman.
(Sgd.) L. A. SOLOMON, Treasurer.

R. M. JOUBERT,
Chartered Accountant (S.A.),
Incorporated Accountant.

Cape Town,
12th February, 1947.

New Members of the Botanical Society. 1946.

(LIFE MEMBERS: **Family Members**: Ordinary Members: *Associates.*)

The star (*) indicates Members who are also Subscribers to the Karoo Garden.
The cross (†) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccuracy in the following list it is requested that notification should be made to the Hon. Secretary, P.O. Box 267, Cape Town.

A.

Abbott, Mrs. A. O.
Abbott, W. C.
Abbott, Mrs. C. W.
Abbott, Dr. C. W.
Adams, Mrs. G.
Adams. T.
Adamson, Mrs. M. H.
Ahrens, Miss F.
Anderson, Mrs. B.
ANDERSSON, MRS. E. J.
ANDERSSON, E. J.
Atkins, Mrs. A. C.
Ayres, S. Jun., Dr.

B.

Baker, C.
*Ballantine, Mrs. R.
Barregar, J. B.
Bartleman, Mrs. E. W
Becker, T.
BEIT, SIR ALFRED
Bell, Mrs. E.
*Beningfield, Major H. H.
Bergh, Mrs. W. O.
Bergh, W. O.
Bisschop, Mrs. D. E.
Blomerus, H. P.
Bonthuys, F. N. H.
Boyes, G. B.
Boys, Mrs. R. H. C.
Bracher, Mrs. E.
*Bradley, J. A.
†Brereton, W. L.
Brookes, R. S.
Broom, Mrs. N.
Broudie, H.
Brown, J. J.
†**Brown, M. Z.**
†Buncher, Mrs. C. R.
Butcher, A. R.
BUTCHER, MRS. H. J.
Butcher, H. R.
Butcher, W. D.

C.

Cannan, J. F.
Carrell, Mrs. E.
Cator, Mrs. A. C. A.
Chalkley, Miss I.
Chapman, E.
†Chater, Mrs. M.
*†Classens, J.
Clarke, Mrs. A. O.
Close, Mrs. R. K.
Clowe, Miss E. D.
Coaker, H. S.
Cook, Mrs. G. W.
Cooke, Mrs. H. M.
Cooper, Mrs. G. H.
*Copeland, J.
Coyne, D.
Crawford, S. N. A.
Crerar, Mrs. A.
Creswell, Mrs. F. H. P.
*Crocker, Miss C. G.
Crowe, D. W.
Cruden, W. A. S.

D.

Daplyn, Dr. P.
†Davidson, Miss M. H.
de Kock, Mrs. S. A.
Dembitzer, Mrs. H. M.
de Vries, N. A.
D'Ewes, D. R.
†de Wet, D. R.
de Wet, J. C. H.
Dey, Mrs. J. S. D.
Diamond, L.
Dick, J.
Drake, Mrs. C.
Duminy, J. A.
Duncan, G.
Duncan, H. D.
*†Durieux, J. H.
du Toit, J. R.
*du Toit, Mrs. L. W.

E.

Earl, Mrs. E. F.
†Eastman, H. A.
Easton, Miss B.
Eckard, J. H.
Edwardian Flower Farm
*Eley, C.

F.

†**Fairclough, P. R.**
Farrell, Mrs. B. S.
Ficksburg and District Horticultural Society
*Forbes, T., Jnr.
Fourie, Mrs. A. P. J.
Frnzen, N.
Frew, Dr. A.

G.

Geest Horticultural Industries
*Geldenhuys, J. P.
Georgeson, Mrs. R.
Gerstner, Rev. Father F. J.
Gibbs, J.
Gilges, Dr. W.
*Goldschmidt, W. B.
Grant, C. P.
Gray, Mrs. C.
Green, C. M.
*†**Grove, Commander G. M. E.**
Guard, S. J.

H.

Harper, Mrs. E.
Harvey, P. H.
Harwood, Mrs. I. B.
Hazorea, Ltd.
HENEY, MISS S.
Henriksen, Mrs. C. T. J.
Herxheimer, Mrs. H.
*Hobson, G. C.
Hochschild, Mrs. J.
Hofmeyr, Mrs. J. W.
*†Hogg, Lt. W. D.
Holwill, Mrs. A. E.
Hotson, Mrs. H.
***Humphries, Ltd.**
Hyde, L. J.

I.

INGELS, DR. A. E.
Isaac, Mrs. F. M.

J.

Jack. Mrs. J. W.
Jackson, Mrs. L. M.
*†**James, Mrs. D.**
James, J.
James, P. S.
Jewish Farmers Federation of Palestine
Johnston, Mrs. A.
Jolliffe, E. J.
*Jones, Mrs. B.
*†JONES, G. C.
Jones, Miss S.
Jones, Mrs. T. E.

K.

Kay, N. D.
Keeler, Miss Z. E.
Kemp, Miss M.
Kerr, Mrs. D.
King, Mrs. A.
King, Mrs. A. H.
King Edward VII Pubic Library
Kirk, G. A.
*Knowles, Lady
*Knowles, Sir George
Kok, Mrs. D.
Koster, Mrs M.

L.

Lacey, Mrs. D.
Laidler, Mrs. D.
*†Lambert, J. H.
Lawrence, Mrs. H. A.
Lawrence, Mrs. H. G.
Laws, J. B.
Lazarus, Miss G.
Le Mans, Mrs. A. J.
†Leslie, Mrs. D. A.
Levy, Mrs. S. H. W.
Levy, Dr. F. J.
†Linington, W. H.
Lipman, B. E.
Lord, H. N.
Lord, Mrs. H. N.
Lord, Mrs. M. E.
Louth Mrs. P.
Louw, Miss A. H.
Louw, I.
Lowther, Mrs. E. M.

M.

Malan, Mrs. G. G.
Marquard, Mrs. A. T.
Marwick, Mrs. E. J.
Maskew, Mrs. E. L.
*Masso, R.
Mathews, Miss D. K.
May, Mrs. A. G.
May, J. A.
†McBlain, G. N.
†McBride, Mrs. L. B.
McConnell, Mrs. F. C.
McCormick, D.
McCormick, Miss E.
McDonald, Mrs. C.
McGregor, Mrs. A.
Melville, Miss D.
†Mennie, Mrs. J. S.
Methven, Mrs. E. L.
Methven, Miss M.
Michelsen, R.
Migdal, H.
Millward Miss E.
Milne, Miss C. R.
Milne. Miss E.
Milner, J. S.
Mirkovic J. D.
Moore, Mrs. I. P.
Moxon, Mrs. H.
Mulvihal, Mrs. R.
*Muntingh, H.
Musson, Mrs. G.

N.

Nel, Mrs. P. R.
Nichol, Mrs. N.
NORTH, A. J.

O.

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Orr, Mrs. A. N.
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(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(c) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

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OF SOUTH AFRICA

Edited by R. H. COMPTON
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NATIONAL BOTANIC GARDENS

Part XXXIII. 1947

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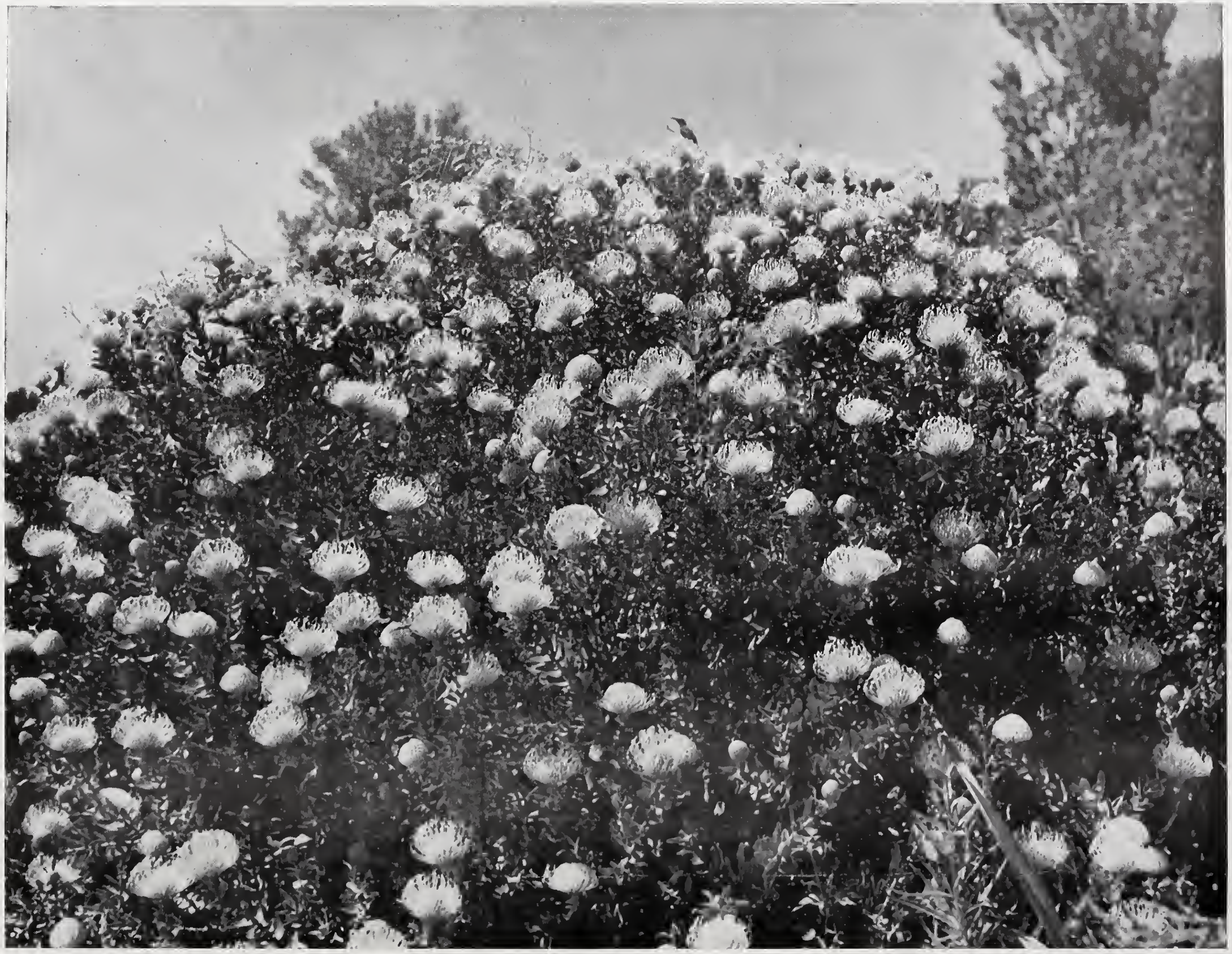

PLATE I. A Leucospermum at Kirstenbosch.

Photo: Blyth Clayton

The Journal of the Botanical Society of South Africa.

EDITED BY R. H. COMPTON.

PART XXXIII 1947

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News and Notes

THE Botanical Society has lost the services as Honorary Secretary of Mr. L. A. Solomon, who resigned at the end of 1947. Mr. Solomon succeeded Mr. Frank Cartwright, the first Secretary of the Society, in 1941, and devoted himself energetically to its ever-growing work until personal reasons and the pressure of private business compelled him to relinquish the voluntary task in which he had taken so great an interest. Mr. Solomon has accepted a seat in the Council of the Society which will therefore continue to benefit by his detailed experience of its affairs.

* * * * *

The Council of the Botanical Society appointed Mrs. W. N. Hall as successor to Mr. Solomon, and at the same time decided to transfer the Society's office work to Kirstenbosch. Mrs. Hall (whose husband is a member of the Kirstenbosch staff) has had experience of similar work in the Lancashire branch of the National Cactus and Succulent Society.

The establishment of the Society's headquarters at Kirstenbosch will have the great advantage of keeping it in close touch on the one hand with the work of the Gardens, and on the other hand with its members and with visitors. The new arrangement will be of service to the public, who will be able to obtain information at a centrally situated office: and it is confidently expected that a considerable increase in membership of the Society will result.

The new office is to be built near the Tea House and car park in a position accessible to the majority of visitors to Kirstenbosch; the plans have been drawn by Messrs. Walgate and Elsworth; the Society has voted the greater part of the cost from its Life Members Fund, and a contract has been entered into with a builder. The new office should be in operation before the end of 1948. In the meantime Mrs. Hall is using a room in the lecture hall.

* * * * *

The new site for the Karoo Garden near Worcester was presented to the Trustees by the Worcester Municipality in 1945, and work there was begun in 1946 under the curatorship of Mr. J. Thudichum. The development of the garden has now reached a stage at which it is possible for a formal opening to take place. This has been provisionally fixed for the afternoon of Saturday, 25th September, 1948. His Excellency the Governor-General, Mr. G. B. van Zyl, who was for several years a member of the Board of Trustees of the National Botanic Gardens, and who has taken special interest in the re-establishment of the Karoo garden, has kindly consented to perform the opening ceremony.

A welcome is offered to all members of the Botanical Society: invitations are being issued individually to those members who assist the Karoo garden by their special subscriptions.

* * * * *

Notices are being issued to members of the Botanical Society calling a special general meeting at Kirstenbosch on the morning of Saturday, 18th September, 1948. The Council has given careful consideration to the rates of subscriptions payable by the various classes of members, in view of the serious need of the Gardens for additional revenue, and is making proposals which involve a change in the constitution of the Society.

The present subscription rates were established at the foundation of the Society, and have remained unchanged for 35 years, during which time, of course, their actual value has been reduced to a fraction of the original. In fact the increase in the number of members of the Society has done little more than keep the value of its grant to the Gardens stationary; the greatest fall in value has taken place within the last ten years, and it would seem only reasonable for the Society to make an effort to increase the actual value of its contribution. This can be done by increase in membership, and members can help greatly by enrolling their friends; but the Council thinks that an increase in subscription rates is justifiable and would also be of assistance. The Council's proposals are quite moderate and it is hoped that the Society will accept them willingly.

It is proposed that Associate Members should in future pay a minimum of 10/- per annum, Ordinary Members 30/- and Family Members 50/-

To-day Associate Members who pay 5/- receive the Journal (which costs about 1/6 per member) and are entitled to receive 5 packets of seeds from Kirstenbosch and share in other privileges; the cost of running the Society (apart from the Journal) is about 2/6 per member. It is clear that at present Associate Membership is very far from paying for itself.

At present members may subscribe an additional 10/- per annum in support of the Karoo garden, and those who do so have the additional privilege of receiving seeds of succulents from Worcester. Owing, however, to the facts that (1) the finances of Kirstenbosch and Worcester have become more closely linked than before, and that (2) seeds of succulent plants are now being produced in greater quantities, it is proposed (*a*) to abolish the special subscription, (*b*) to increase the normal subscription to the Society by 9/- in the case of Ordinary Members and 8/- in the case of Family Members, and (*c*) to make seeds of succulents available on equal terms with all other classes.

It is sincerely hoped that very few members will find it necessary to resign on account of the increases in subscription rates. Assuming that no resignations take place it is expected that an increase of about £700 will be available as a contribution to the funds of the Gardens.

* * * * *

The Botanical Society exists primarily to give support, financial and otherwise, to the work of the National Botanic Gardens. While it is not desired to emphasise what members "get out of it", it may be pointed out that the free distribution of seeds is a very valuable privilege, and one which if regarded from a mercenary point of view would more than compensate members for the cost of their subscriptions. The seeds available to members would be very low priced at the cost of their subscriptions, and there are other advantages as well.

But the feature of membership which, as the statistics show, appeals to the majority of members, is that in subscribing to the Society they are showing their interest and pride in the Gardens and their desire to assist in their maintenance and development.

* * * * *

The Latin proverb, *bis dat qui cito dat,* has a special application in the Botanical Society. It would surprise Members to know the enormous amount of time and energy which the Secretary has to expend because some of them put off paying their subscriptions until they have been asked to do so two or three times. Some Members, sad to relate, go on receiving the Journal and other privileges of Membership for years before they finally pay their arrear subscriptions. A Society such as this should not be involved in unnecessary work and expense, and we appeal to Members to send their subscriptions as soon as they receive their reminders. Incidentally it may be mentioned that membership goes by the calendar year, and that subscriptions are due in January.

* * * * *

Mr. F. W. Thorns, who was appointed Curator of Kirstenbosch in 1936, relinquished his post in August 1947 on his appointment as Director of Parks, Recreation and Beaches in Durban Municipality. His eleven years curatorship at Kirstenbosch, which included the period of war, was marked by considerable progress, both in the physical development of the Gardens and in the methods of cultivation and display. He was responsible for the complete terracing of the nursery, the lay-out of the "new area" to the left of the entrance drive, the rock-work and the new pool at the foot of the dell, and many other improvements; for the introduction and planting of many new trees and the regular production and use of compost; and war conditions added greatly to the difficulties of his task. He made several contributions to this Journal, and the present number contains an article on the use of indigenous plants in parks and gardens (for permission to print which we are indebted to the S.A. Institute of Park Administration).

* * * * *

Mr. H. F. Werner, who succeeded Mr. Thorns as Curator of Kirstenbosch in January 1948, was born in Kingwilliamstown, trained at Stellenbosch University, the John Innes Horticultural Institute, and the Royal Botanic Gardens, Kew. He held posts in the Blackpool Parks Department and at the Blackpool Technical College, and on returning to the Union was appointed by the Public Works Department, first as Acting Head Gardener, Union Buildings, Pretoria, and then as Gardener in Charge of the Libertas and Bryntirion Estates, Pretoria, comprising several of the official residences. His war service covered five years.

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Captain T. M. Salter's fine work entitled "The Genus Oxalis in South Africa" (published as a supplementary volume to the Joural of South African Botany in 1944) is the most important and comprehensive study of this large genus (over 200 South African species are described with full references and notes, and many of them with illustrations). The genus is represented in the Peninsula by many species, some of which are conspicuous and charming flowering plants of the winter months. Captain Salter contributes an article to this Journal giving notes on the Peninsula species, and including a key which enables anyone, from schoolboy to full-fledged botanist, to ascertain the name of the specimens he observes or collects.

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The plates in this issue of the Journal show some of the work that goes on at Kirstenbosch. There is the hard physical work and skilled supervision which is spent in construction — steps, walls, kerbs and gutters, rock work, drainage, water supply, cobbling and gravelling, and all the other items by which the garden framework is built up. Then there is the gardening side — the propagation of great numbers of seedlings in the nurseries, the ground preparation and planting out, the weeding, after-care, etc., etc., and as a sample of the results the production of a magnificent specimen such as the Leucospermum (with sugar-bird atop) shown in the frontispiece. The educational side is indicated by a picture of a school class (from Oakhurst Primary School in this instance), engaged in nature study under Miss Johns' guidance.

Kirstenbosch has other sides to its work too, and perhaps in future Journals these may also be illustrated. The support of the Botanical Society is vitally necessary for the maintenance of the Gardens in all its aspects; the subscriptions of members are an appreciation of the efforts which the management of the Gardens is making. *If you value the Gardens, help them by subscribing to the Society and by getting your friends to do the same.*

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Mrs. E. F. Wright, who, as Miss J. W. Steytler, held the post of Secretary of the National Botanic Gardens since 1924, resigned in October 1947 in order to be married. Her long period of work had been of the greatest value to the Gardens, and her energy and devotion to its interests had enabled her to cope with a great volume of varied and ever-increasing work single-handed. The Gardens owe her a deep debt of gratitude, and all concerned wish her every happiness in her new sphere of life.

Miss B. E. Martin, who has succeeded Mrs. Wright as Secretary of the Gardens, was a member of the gardening staff before the war, and her earlier experience of the work at Kirstenbosch is of value in her new post.

Owing to the great increase in administrative work in the Gardens, Mrs. Handley Smith (who had acted as Secretary during the war) agreed to return temporarily on a part time basis as Treasurer; and later it was decided to create a new full-time post, viz. Treasurer Librarian, to which Miss M. Heginbotham, formerly of the Wynberg Public Library, was appointed in May 1948.

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It will be seen that there have been many changes in the Kirstenbosch staff during the end of 1947 and the beginning of 1948, and much re-organisation has taken place. The Botanical Society can be assured that there will be no loss of efficiency, and that the new occupants of the key posts have taken up their duties with energy and enthusiasm. It is to be hoped that the Botanical Society will give them every possible support and help, and the best way of doing this is to add to membership, this being a task in which every member can take an active part.

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Miss W. F. Barker, Senior Botanical Assistant in the National Botanic Gardens, has been granted six months leave of absence, and sailed for England at the beginning of July. She will spend part of her time there in working at Kew and the British Museum with a view to the completion of her monograph on Lachenalia, a work on which she has been engaged for several years and which has reached an advanced stage.

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The areas in the Western Cape on which once grew some of our most lovely wild flowers have dwindled year by year under the pressure of subsidised agriculture until now they are a mere fraction of what they were a quarter of a century ago. There is practically no cultivable land — that is land of suitable soil in a reliable climate — which has not fallen a victim to the plough; the flora has been eradicated, a crop or two has been taken from it and in a high proportion of instances destructive erosion has set in. Careless, reckless, ignorant cultivation is surely and swiftly creating barrenness and poverty in what was once a fair land — few people seeing it to-day realise how fair it once was. True, we need our daily bread; but we shall need it next year, and the year after too, and every year there is less soil, less fertility, less reliable water supply, higher costs of production. The flowers have gone, the wheat lands are going: what shall we be left with? Bare rock, rhenoster bush, adulterated bread eked out by expensive imported biscuits.

Professor Talbot's book "Swartland and Sandveld" should be read by every self-satisfied Western Province farmer and smug Capetonian who still believes that erosion and soil sterility are far-off phenonema. A perusal of this careful, accurate and temperate book, followed by a few miles drive into the country with eyes open would show our city dwellers what is happening to "the granary of the Cape" just outside our doors; how the soil of the Koeberg and the Tygerberg is disappearing; how their smooth surfaces are being carved into hideous dongas; how the Diep River and the Elsies Kraal River are being choked with silt; how poor the crops are judged by a reasonable standard; and how the farmers — most of them — persist in their destructive methods of cultivation.

And as for the flora — just a patch here and there on ground that was really too rocky to plough and too sandy to be profitable to cultivate even with the aid of subsidies.

When one adds to the destructive cultivation of the hills and plains the ruthless burning of the mountains — what have we to look forward to but the ultimate desert, sans soil, sans water, sans life? This is the way other once fertile countries have gone.

* * * * *

The voices of the conservationists may cry in vain in the wilderness-to-be while the free-agent farmer destroys his heritage and the other maniac with his box of matches burns the mountain, but they should at least be allowed to have their way to some extent. National Parks, National Reserves, Nature Reserves, Game and Bird Sanctuaries — these are expressions of the desire to conserve some vestiges of what our land was before the destructive hand of civilised man descended upon it. Here and there small fragments of the Union with something of their fauna have been preserved in this way; the flora is also protected, more or less as an afterthought. There still exist considerable tracts of country, unsuitable for agriculture, and very largely in public ownership, which could be and should be declared as National Reserves and National Parks and guarded as valuable national possessions. In the Cape mountain zone the flora would naturally be the first object of care — the fauna, never very plentiful, has now been reduced almost to extinction and would take many years to re-establish. Guardianship over these mountain reserves would be relatively easy to establish; the difficulties involved in respect of farming and ranching are much more acute in other parts of the country: and the public too, has an overwhelming interest in the mountains as the sources of their vital water supplies.

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The Royal Society of South Africa advocated four or five great National Reserves in the Cape mountains. In this Journal a special plea is made for one of these areas — in the Outeniqua Mountains — to be proclaimed a National Park. This article was published first in "African Wild Life" Vol. 2, No. 1, and thanks are due to the Wild Life Protection Society of South Africa for permission to reprint it.

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The appointment of a regular patrol by the Wild Flower Protection Section of the Botanical Society has had a salutary effect on the traffic in wild flowers in the Cape Peninsula. A large number of offenders against the Ordinances have been brought to court, and punishment has been inflicted in a high proportion of cases. Cultivated garden flowers now greatly preponderate on the stands, and the hawking of wild flowers has been much reduced; the flower sellers are well aware of what species are protected and what are not, and the more respectable amongst them keep a watchful eye on their erring competitors. The police, moreover, in certain districts are alive to the possibilities of illicit trade in wild flowers and prosecutions are made from time to time.

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The bush fire that took place in the French Hoek mountains in 1943 destroyed the only known wild plants of *Serruria florida,* the "Blushing Bride", and it was thought that there was a real danger that this exquisite member of the Protea family might be extinct in the wild state. (See this Journal, Part 29). A recent visit to the locality, however, revealed about sixty plants in one group, so that this rare and lovely species has had another respite. It is thought that someone may have scattered seeds obtained from Kirstenbosch in the burnt area, but whether this is the cause of the regeneration or whether seeds lying in the soil survived the fire and germinated afterwards cannot be positively decided.

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The first field excursion of the recently formed Cape Bird Club was held in the Kirstenbosch Botanic Gardens on Saturday morning, 6th June, 1948. Thirty-three members (representing 75% of the total number of members) turned up. The party was split up into small groups each under the leadership of an experienced bird watcher. The aim was to see and identify as many bird species as possible and to notice their characteristic features.

When the different groups had returned to the starting point a total list was compiled of all the species seen. It appeared that nineteen different species were observed including the red-breasted Sparrowhawk (*Accipiter rufiventris rufiventris*) and the Scrub-Warbler (*Caffrillas Barrattii*). Taking the time of the year into consideration the result of the excursion was quite satisfactory. Miss Johns had put out an interesting exhibit of nests of common Kirstenbosch birds and a number of books on South African birds which was very much appreciated by the members present.

Indigenous Plants.

By F. W. THORNS, F.INST.P.A., S.A.,

Director, Parks, Recreation and Beaches Department, Durban Corporation.

THE main reason for my choice of subjects is the desire to stimulate a greater interest in the more attractive types of our indigenous plants, with a view to seeing greater use made of them in our public gardens. It is a subject in which I have considerable personal interest, gained during my recent association with the National Botanic Gardens, where I came in contact, in many instances for the first time, with numerous examples of highly-decorative plants that are rarely seen in cultivation elsewhere in this country.

In the first place, I consider that we who are in charge of public gardens cannot afford to neglect any opportunity to introduce new or different plants into our gardens, and that, therefore, we should take a greater interest in some of the promising material which occurs as it were on our own doorsteps. In addition, we quite rightly place a high value on our ability to attract tourists, and I have reason to believe that many tourists are disappointed at being unable to see more examples of South African plants when they visit our public gardens. The position to-day is that many indigenous South African plants are becoming well-known in those overseas countries where climatic conditions favour their cultivation, and many visitors who have acquired a slight knowledge of them in this way are very keen to see more of our characteristic native plants. In most cases it is impossible for them to make the necessary journeys into remote parts of the country where these plants grow wild, and they therefore seek them out in our public gardens. Quite often they are disappointed in their quest, which is a matter of some surprise to them, and I consider it to be a reproach to us.

Not only have we the visitors from overseas to consider; there are also many enthusiastic South African gardeners who are genuinely interested in indigenous plants, but who lack the opportunity of becoming acquainted with them. I could quote many instances where South African visitors to Kirstenbosch have admired particular plants, and have been surprised to learn that the plants under notice actually come from the visitors' own locality.

While freely admitting that many of us are singularly unobservant in our walks abroad, I am sure that the main reason for the failure of these visitors to recognise their own local plants is that they were seeing them for the first time as well-developed specimens in a garden setting. I mention this point as I have found on several occasions that plants known in the wild as rather poor subjects will, when removed from the hazards of drought, fire and grazing animals and given the protection afforded by cultivation, turn out to be really valuable garden plants. A particular case is Selago Thunbergii, a recent introduction to Kirstenbosch.

The History of the Cultivation of South African Plants.

Early visitors to South Africa were greatly impressed by our wild plants, and records of European horticulture show that a tremendous variety of South African flora was introduced to cultivation during the eighteenth and nineteenth centuries. Many species were grown as botanical curiosities, and I am not concerned with these at present, but rather with the more decorative types of flowering plants which found a place in the gardens of the day by reason of their value as garden plants.

The gardeners of the period were not slow to recognise the potential value of these early introductions, and they lost no time in selecting and crossing the most promising types, thus laying the foundations for the production of some of our most valuable groups of garden plants. These were the days of large private gardens and heated greenhouses. Cape heaths, proteas, succulents, bulbous plants; in fact representatives of all types of South African plants were grown under glass, and many varieties of so-called "geraniums" were raised from pelargonium species to become the standard subject for summer bedding in the open.

Changes in horticultural fashions and economic conditions have resulted in the disappearance of the majority of these large collections of South African plants in Europe, but the gardens of the world still benefit from the work of the early enthusiasts, whom we have to thank for the beautiful Gladiolus varieties, Montbretias and Gerbera hybrids, together with such annuals as Nemesias and Dimorphothecas, to quote a few that have arisen from original species first exported from this country.

The development of sub-tropical countries in other parts of the world has brought about a new demand not only for the improved forms raised from South African plants, but for the species themselves. I have been amazed to learn, from correspondence and personal contact, of the tremendous variety of South African flora that is being grown in parts of Australia, New Zealand and California. This material is not being grown for sentimental reasons, but is being handled by hard-headed business men with an eye to profit, and I can foresee the day when we South African gardeners will be re-importing selected and improved varieties of yet more of our own plants at considerable expense, as we now do in the Gladiolus varieties we value so much.

The main points to be noted here are that the gardens of the world have been enriched in the past by the addition of plants derived from our native species, and that the movement is still going on with great possibilities for the future. So far, this country has taken little or no part in these developments of its own plants, which was understandable when this was an undeveloped country with no facilities for intensive horticulture, but for which there appears to be no adequate reason to-day.

To quote a few examples of the interest which is being shown in our plants by overseas growers: I recently met a commercial cut-flower grower from California who claimed to grow South African Heaths by the acre, and who is so enthusiastic about them that he made a special trip to this country in search of additional species, only to be astounded to discover that these plants are rarely seen in cultivation here. Other American growers are specialising in Gloriosas and Gerberas, while many grow our Proteas. I have seen an American catalogue which offers many Agapanthus varieties that are new to general cultivation, but which from illustrations given are obviously the lesser known species and varieties which occur wild in this country.

From Australia it is learned that Cape bulbs are grown in large quantities, and we are already importing bulbs from this source, in particular strains of Watsonia, Freesia and Lachenalia. Incidentally, a distinguished Australian visitor told me how he looked in vain for the Cape Chestnut tree in our streets, although it is a favourite street tree in certain Australian towns. He was thrilled, however, to see this beautiful tree growing in profusion in the wild.

Suggestions for inclusion of Indigenous Plants in our Public Gardens.

In pursuing my point that we might use our own flora more largely, I do not suggest that we should neglect the cultivation of beautiful plants from other countries, but that we should make an effort to include indigenous flora in addition to our other displays. In the case of large parks departments I consider that the practice of setting aside special areas for the exclusive cultivation of native plants is an ideal method, as has been demonstrated in Johannesburg and Pretoria. In other cases, it should be possible to develop a corner of an existing park as a special area for indigenous plants, or, at the very least, to introduce some species into the general layout.

Whatever method is adopted, it is important that the plants be correctly and legibly labelled for the benefit of visitors and students, and I am confident that such efforts will stimulate a demand for the lesser known types of South African plants, with the result that they will eventually be made available by our commercial growers.

The job of selecting and developing these plants must naturally fall to the commercial nurseryman, as the park superintendent, with his multifarious duties, has little time for plant breeding. His task would be to bring the native plants to the notice of the public by displaying them in the gardens under his control, and I am confident that a demand for them would follow as a matter of course, which would result in native plants being made available by nursery firms.

The fact that our native plants are much more adaptable than is generally realised must not be overlooked. I would never have thought it possible for Cape Ericas and Proteas to be successfully cultivated on the Reef, but several enthusiasts have proved this to be a practical proposition. Conversely, the Transvaal Gladiolus psittacinus was introduced to the Cape some years ago, where it succeeded so well that it plays a big part in the cut flower trade, in addition to being a valuable garden plant. Many other instances come to mind of plants making themselves at home under conditions very different from those in their natural habitat, and only a trial will prove just what can be done.

One important point must be stressed however: there is a tendency to treat native plants as some sort of poor relations and to plant them away in some inhospitable corner of the garden where conditions are severe, while all possible care is lavished on the pansies or petunias. This method of dealing with indigenous plants is quite hopeless, and it must be understood that native plants will respond to proper treatment just as readily as any other type of plant, and that successful results will only follow where the requisite conditions of soil and moisture are provided.

I do not propose to weary you with a list of plant names, but I would like to suggest certain groups of indigenous plants that are well worthy of a place in our gardens. Some of the Protea family, particularly the Leucospermums, make excellent flowering shrubs, and as cut flowers they are ideal. That they are more adaptable than was once imagined has been proved, and the difficulties over their propagation can be overcome. Cape Ericas might receive more attention where conditions permit, and I would also recommend such shrubs as Ochna spp., Gardenia spp. and Dais cotinifolia for shrubberies.

For borders I would suggest that more use be made of Sutera spp., Selago spp. and such plants as the semi-shrubby Asters and Felicias.

The smaller Cape bulbs are very suitable for narrow borders or rock gardens, and the numerous species of Watsonias that can be had are invaluable for garden decoration. Many of the lesser known species of Agapanthus are well worth cultivating, if only for cut flowers, and I feel certain that there is a fertile field here for the plant breeder of the future.

Cape annuals are well known to most of us to-day, as they are being grown in many parts of the Union. Where conditions are suitable, which means sunny days without too much rain, they will provide glorious colour effects if massed, and their extended cultivation is strongly recommended.

To conclude, I would repeat that we should find it both profitable and interesting to pay more attention to the cultivation of our own indigenous flora. Not only can we add character and beauty to our gardens in this way; we can open up possibilities for the development of still more races of garden plants for the future, and we may quite possibly prevent certain species from becoming extinct and irretrievably lost.

PLATE II. A Nature Study Class among the Strelitzias at Kirstenbosch. *Photo*: **Blyth Clayton**

The species of Oxalis occurring in the Cape Peninsula and how to distinguish them.

By Captain (s) T. M. SALTER, R.N. (Ret.)

OUT of over 200 species of South African Oxalis (*Surings*), 32 occur in the Cape Peninsula, excluding the garden weed *O. latifolia* with pinkish-purple flowers, which is a native of Mexico.

After the key, there follows an alphabetical list of the species with notes as regards the comparative frequency of their occurrence, the usual flowering season and localities in which the more uncommon species may be found. Where changes in nomenclature have been necessary, reference is made to the invalid, though perhaps more familiar names.

Although the bulb is one of the most important characters in distinguishing and classifying the different species of Oxalis, our Peninsula forms can usually be determined without it. Should these plants be collected in other parts of South Africa, however, it is highly important to obtain bulbs, if they are ever to be identified. The areas richest in this genus are the Clanwilliam and Van Rhyn's Dorp Divisions and Namaqualand and there are undoubtedly many new species and varieties yet to be discovered. In the Cape Peninsula the most prolific area in variety of species is Lion's Head and Signal Hill, during May and June.

Plants with double flowers are sometimes found in the species *compressa, glabra, hirta, luteola, pes caprae, Pocockiae* and *obtusa*. It is possible that they occur in other local species.

KEY.

1.	Flower stalk with more than 1 flower.		2
	Flower stalk with only 1 flower.		8
2.	A creeping annual without a bulb: flower very small, yellow.	*corniculata*	
	Not creeping: plants with bulbs.		3
3.	Flowers yellow.		4
	Flowers never yellow.		5
4.	Stalk of the leaf flattened.	*compressa*	
	Stalk of the leaf not flattened.	*pes caprae*	
5.	Flower stalk and calyx with gland-tipped hairs: plant usually with a stem.		6
	Flower stalk and calyx not as above: plant usually stemless.		7
6.	Leaflets divided to about the middle.	*dentata*	
	Leaflets divided well below the middle.	*stellata* var. *glandulosa*	
7.	Leaflets widely bi-lobed with rounded lobes: flowers very pale mauve.	*caprina*	
	Leaflets often 1 inch wide, with triangular lobes: flowers pinkish purple.	*latifolia*	
8.	Leaves simple, i.e. without separate leaflets.	*monophylla*	
	Leaves with 3 or more leaflets.		9
9.	Leaves with more than 3 leaflets.		10
	Leaves with 3 leaflets.		12
10.	Flowers yellow: leaflets usually 5 to 9.	*flava*	
	Flowers white or pink.		11
11.	Leaflets 12 to 20: flowers white.	*tomentosa*	
	Leaflets 5: flowers pink.	*polyphylla* var. *pentaphylla*	
12.	Stem developed above ground, often more or less leafy.		13
	Stemless.		27

13.	Leaflets narrow, oblong, or wedge-shaped, always longer than broad.		14
	Leaflets heart-shaped or divided to the middle or below.		23
14.	Hairs all gland-tipped: petals with a red margin beneath.	*multicaulis*	
	Hairs not gland-tipped (or in *O. versicolor* sometimes with gland-tipped hairs on the flower stalks and calyx).		15
15.	Stem bare or with very few leaves: flower stalks arising from the top of the stem.		16
	Stem densely leafy, the leaves almost stalkless: flower stalks mostly arising below the top of the stem.		21
16.	Flowers ½ inch or less in diam.: stem very short: sepals with 2 calli at the tip. A very small species.	*pusilla*	
	Flowers larger: stem usually at least an inch long.		17
17.	Leaflets and sepals with distinct thickened red or orange swellings (*calli*) at the tip.		18
	Leaflets and sepals without such calli, or in *O. glabra* sometimes with minute calli.		20
18.	Petals with a reddish margin beneath.		19
	Petals not as above.	*polyphylla*	
19.	Leaflets without hairs on the upper face.	*versicolor*	
	Leaflets hairy both above and beneath.	*argyrophylla*	
20.	Flowers slightly hairy outside: petals pale rose.	*falcatula*	
	Flowers without hairs: petals usually red: bulb very small.	*glabra*	
21.	Leaves on the stems scattered: flowers usually red.	*glabra*	
	Leaves closely clustered on the stem.		22
22.	Petals white with a red margin beneath.	*tenuifolia*	
	Petals pale mauve or red, often with a buff-coloured margin beneath.	*hirta*	
23.	Leaflets divided to the middle or below: flowers pink.	*bifida*	
	Leaflets widely heart-shaped.		24
24.	A water plant: flowers small, white.	*natans*	
	Land plants.		25
25.	Leaves almost stalkless.	*hirta*	
	Leaves with well developed stalks.		26
26.	Stem branching: leaflets without hairs: flowers very pale mauve or white.	*incarnata*	
	Stem not branching, usully short: leaflets hairy: flowers white or rarely rose-red.	*lanata*	
27.	Leaflets broadly heart-shaped.		28
	Leaflets roundish or in *O. minuta* oval or oblong-wedge-shaped.		29
28.	Hairs on the flower- and leaf-stalks reversed: flowers brick red or rarely pale yellow.	*obtusa*	
	Hairs not reversed: flowers white.	*lanata*	
29.	Anthers shaped like arrow-heads.		30
	Anthers more or less egg-shaped.		33
30.	Leaflets roundish, usually as broad or broader than long.		31
	Leaflets oval or oblong-wedge-shaped.	*minuta*	
31.	Hairs on the margins of the leaflets set closely, the leaflets often purple beneath. (Flowers from April.)	*Eckloniana* var. *Sonderi*	
	Hairs on the margins of the leaflets distant on minute teeth, the leaflets green beneath. (Flowers from June.)		32

32.	Flowers white.	*nidulans*
	Flowers rosy-purple.	*nidulans* var. *denticulata*
33.	Flowers yellow.	*luteola*
	Flowers not yellow.	34
34.	Tube of the flower slightly swollen, not funnel-shaped: leaflets with very inconspicuous transparent streaks which turn black after drying: flowers reddish purple, pink or white, rarely salmon.	*purpurea*
	Tube of the flower and leaflets not as above.	35
35.	Plant covered with small gland-tipped hairs: flowers white to pink, very small.	*punctata*
	Plant without gland-tipped hairs.	36
36.	Extreme base of the leaf stalk winged: flowers mauve.	37
	Base of the leaf stalk without wings: flowers with a widely funnel-shaped tube.	38
37.	Leaflets pale green above and beneath: bulb without wings.	*depressa*
	Leaflets dark green above, purple beneath: bulbs with 4 vertical wings.	*Pocockiae*
38.	Flower pale rosy lilac, the tube yellow.	*commutata*
	Flower, including the tube, rosy-purple: flower smaller.	*commutata* var. *concolor*

ALPHABETICAL LIST WITH SOME NOTES ON THE SPECIES.

argyrophylla Salter. Frequent in the northern parts: May—July. Formerly known as *O. falcata* Sond. var. *callosa.*

bifida Thunb. Common on partly shaded slopes: March—July, but sometimes Sept.—Oct., when the plants become bushy.

caprina L. Common, usually near cultivation, or as a weed. Only the form with short styles occurs in the Peninsula.

commutata Sond. Frequent on flats and slopes: March—June. Var. *concolor* Salter generally grows at high altitudes except south of Smitswinkel.

compressa L.f. Frequent in the northern parts: June—Sept.

corniculata L. A common cosmopolitan weed. Flowers throughout the year.

dentata Jacq. Common on slopes: March— May. Often confused with *O. livida* Jacq. It is the only species in which the slug-like contractile root acts horizontally, dragging the newly formed bulb sideways to a new position.

depressa E. and Z. Local on sand dunes south of Retreat. May. Formerly confused with *O. convexula* Jacq.

Eckloniana Presl var. *Sonderi* Salter. Common: April—Aug. Formerly erroneously known as *O. purpurea* Thunb. not of Linn. The typical form of *O. Eckloniana,* with sulphur-yellow flowers, which used to occur on Green Point Common, seems to have been exterminated.

falcatula Salter. Local on Lion's Mt.: May—July. Formerly known by the invalid name *O. falcata* Sond.

flava L. Local on Lion's Mt.: May—June.

glabra Thunb. Common on flats and low slopes: May—Aug.

hirta L. Common and very variable: April—Aug. A white form, without hairs, occurs near Retreat and a greyish-hairy variety *canescens* (Jacq.) Salter, with deep rose short-tubed flowers, grows on the Saddle on Lion's Mt.

incarnata L. Common in the woods at Kirstenbosch: Aug.—Dec., and occasionally March—April.

lanata L.f. Common on slopes: May—Oct. The variety *rosea* Salter, with rose-red flowers, is very local at and near Kirstenbosch: Aug.—Sept.

latifolia H. B. and K. A garden weed, introduced from Mexico: Feb.—April.

luteola Jacq. Common: May—Aug. There is a form with purplish brown margins beneath the petals (var. *marginata*) but it is hardly a variety.

minuta Thunb. Local on damp flats; frequent about Kenilworth: May—June.

monophylla L. Local. Abundant on Lion's Mt., occasional elsewhere: April—June.

multicaulis E. and Z. Local on the east slopes of Devil's Peak: May—June.

natans L.f. Local in pools near Kenilworth: Aug.—Nov.

nidulans E. and Z. Occasional in rather damp places: July—Aug. Var. *denticulata* (W-Dod) Salter grows in drier situations.

obtusa Jacq. Common: July—Oct. A rather rare pale yellow form occurs on the eastern slopes in the north.

pes caprae L. Common: June—Oct. Formerly erroneously known as *O. cernua* Thunb. A more hairy variety, *sericea* (L.f.) Salter, occurs on Lion's Mt.

Pocockiae L. Bolus. Local and rare in cliff crevices above Partridge Point: April—May. All the plants seen have double flowers.

polyphylla Jacq. Common: March—June. The variety *pentaphylla* (Sims) Salter is equally common.

punctata L.f. Common: April—July. One of the smallest species.

purpurea L. Common: April—Sept. The pink and white forms occur on Lion's Mt. and the salmon form near Raapenberg Golf Links. Formerly known as *O. variabilis* Jacq., but it was first named *purpurea* by Linnaeus.

pusilla Jacq. Frequent on flats: May—June. A very small species.

stellata E. and Z., var. *glandulosa* Salter. Local and rare below cliffs above Partridge Point: April—May. Partial to shade.

tenuifolia Jacq. Occasional on flats and slopes; Devil's Peak, Wynberg Hill and Kenilworth Race Course: June—Aug.

tomentosa L.f. Local, but abundant on Lion's Mt: April—June.

versicolor L. Common: May—Sept. The form on the hill slopes is softly hairy; that on the flats usually has gland-tipped hairs on the calyx.

A National Park in the Outeniquas.

By R. H. COMPTON.

A NATIONAL PARK in its complete form fulfils three main objects — conservation, education, recreation. The national park idea originated at Yellowstone in the United States, and it is in North America that it has found its most complete expression.

The great American national parks protect areas of beautiful scenery with their associated fauna and flora; they have an elaborate and highly efficient educational service with staffs of ranger naturalists, who organise museums, lectures, nature trails and so on, and carry out research work in the local natural history, and they are provided with every possible facility for the enjoyment and recreation of the people.

In South Africa we are still a long way from giving proper expression to these objects. Our national parks are mainly game sanctuaries. Provision is made in a limited way for the visits of the public, but the educational aspect is most rudimentary. Much has to be done before any one of our national parks attains its full status as judged by American standards, in spite of our outstanding richness in fauna and flora.

In our national parks we have concentrated, as is perhaps natural, on the protection of the larger fauna, and nothing could be more striking than the results of this conservation policy in the animals of the Kruger Park as compared with the scared and scattered remnants of our fauna outside. Proper measures of conservation have been followed, there and elsewhere, by quite astonishing success.

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Nothing Yet For Flora

So far, however, we have established no national park in which the idea of conservation is focused upon the flora. It is widely recognised that in the Union we have a flora of great variety, richness, beauty and interest. This applies to all the main sections of the country, but if there is one area whose flora is outstanding in these respects it is undoubtedly the Cape coastal belt and mountain ranges. This is the home of the "Cape Flora" — a unique assemblage of plants with only slight relationship with the plants of the rest of Africa — a flora whose most striking elements are the proteas and heaths and a host of bulbous plants of great beauty, comprising an astonishing number of species and showing a great degree of local endemism.

Just as the Union's fauna has been reduced to a mere vestige by the "sportsman" and the biltong hunter and by the competition of goats, sheep and cattle, so the Cape flora is being threatened and has already been in part irrecoverably destroyed by the flower picker, the veld-burner, the grazier and the cultivator, as well as by the rapid spread of weeds (especially pines, wattles and hakeas). And just as conservation has brought about the salvation and restoration of the fauna in the national parks, so conservation may be expected to bring about the salvation and restoration of our flora.

Needs Positive Action

I wish to emphasise that conservation means definite positive action, and not merely unenforced paper proclamations which are virtually dead letters from the day of promulgation. The business of safeguarding the flora has to be taken in earnest, just as in the case of the fauna. This necessitates some such organisation as a national park with its own staff and protective measures in order to make conservation a reality and not a bureaucratic phantasm. It requires constant and permanent watchfulness; it is much more costly and arduous than mere printing but it is emphatically worth while.

Two years ago the Royal Society of South Africa issued a valuable report on the problem of the conservation of the mountain vegetation in the Western Cape Province. This analysed the subject and made certain recommendations which should receive the most careful consideration. One of these was that there should be established five "National Reserves" in the Cape mountain region for the express purpose of preserving the indigenous vegetation. The reservation and proper control of these five large areas would have the effect not only of enabling the flora to survive and regenerate itself; it would also result in the maintenance of the vital water supplies of the country, the areas in question being important catchments.

Proper National Park

In writing this article I wish to take this important and fruitful suggestion a stage further, and to advocate that one of these areas at least should be not only a national reserve, but a full-scale national park: in fact that it should not only serve the first function of conservation, but should also be educational and recreational for the people.

The area which is most suitable for this purpose lies halfway along the great chain of mountains which extend almost parallel with the coast from Worcester to Humansdorp. The middle section of these mountains is known as the Attaquas and the Outeniquas. They reach a height of over 5,000 feet in the Cradock Berg behind George and there are many fine summits of over 4,000 feet in this section of the range. The southern slopes are steep and consist of buttresses clothed with Cape bush or scrub vegetation of great richness and beauty, and ravines filled with indigenous forest. On the northern side lie the broken hills and plains of the Little Karoo in which succulents in great variety are to be found.

Suggested Park Area

The area that is suggested for establishment as a national park can best be defined by reference to the two great passes which traverse it over the mountains. The Robinson Pass is part of the direct road from Mossel Bay to Oudtshoorn, and crosses the Attaquas Mountains at a height of 3,000 feet. Twenty-two miles to the east is the celebrated Montagu Pass traversed by both road and railway from George to Oudtshoorn, and crossing the Outeniqua Mountains, also at an altitude of 3,000 feet. Here too is the old Voortrekker Road, clearly visible on the edge of one of the mountain ridges, and now marked out by a series of stones.

The national park should have as its west-to-east axis the mountain chain lying between the summits of the Robinson and Montagu Passes, and overlapping them for a few miles in each direction; its total length should, therefore, be about 30 miles. In the north-to-south direction it would have an average width of about eight miles and would comprise a mountain section and a strip of Karoo on the north of the main axis, and on the south side it would consist of the fine buttresses and forest-filled kloofs which form the main escarpment of the range.

The first questions which would be asked about a proposal such as this are as to (1) suitability and (2) practicability.

Features Available

As to the *suitability* of the area for a national park it has the following features:

(*a*) Magnificent *scenery,* bold mountains with some spectacular peaks.

(*b*) *Vegetation* ranging from dense evergreen forest through the "Cape" assemblage in unsurpassed richness and beauty to a karoo area with a well-developed and typical succulent flora.

(*c*) A *fauna* which includes one of the very few remaining herds of the mountain zebra, now almost extinct. To preserve this animal alone would be ample justification for the establishment of a nature reserve. This herd has been much reduced in numbers during the last 30 years, and there now seem to be about a score of the animals remaining. (Probably the only other herd is the small one in the Cradock district, itself in a precarious position.) In addition to mountain zebra there are several other large game animals, and although not comparable with the faunistic wealth of the Kruger National Park, protection would in time bring about a restoration of the Cape fauna to something like its original strength.

(*d*) *Accessibility.* The two main roads and the railway would provide ready access for visitors. The park could be reached in less than an hour, by excellent roads, from George, Oudtshoorn or Mossel Bay. Much of the area, however, is only served by rough roads and tracks, and it would be possible, therefore, to control public access as may be desirable in the interests of conservation.

(*e*) *Educational opportunities.* It would be difficult to find any area providing better opportunities for the study of scenery, geology, botany and so on, or for the establishment of nature trails, a park museum, and a ranger naturalist service. The time will come when these activities will be regarded here, as in the United States, as an intrinsic part of a national park establishment.

(*f*) *Recreation* and holiday-making. The area offers excellent opportunities for various types of accommodation — country hotels. rest camps, picnic sites. Some of these could be equipped with "attractions" such as tennis courts and swimming pools which would not conflict with the main objects of the park but would make them into pleasant holiday places. The mountains would offer splendid opportunities for climbing of all degrees of difficulty, and bridle path and tracks could be constructed so as to provide most attractive excursions on foot or horseback. The limitation imposed on personal freedom in the Kruger Park, by the presence of dangerous animals, would not apply in the case of the Outeniqua Park.

Turning now to the question of *practicability,* it may be said at once that to establish a national park as suggested would be a matter of great simplicity and very little expense. *Practically the whole area in question is already in State ownership as forest reserves.*

On the southern side there is a continuous belt of forest reserve between the two passes, and extending beyond them in both directions. On the northern side the belt of Crown land is interrupted here and there by farms still in private ownership, but a large area has been acquired in recent years and it should be possible eventually to eliminate the breaks of continuity (which even now are not of great importance).

At present the area in State ownership which might be made available for the purposes of a national park by negotiation with the Departments concerned is estimated at 20,000 morgen on the southern slopes and 11,000 morgen on the northern side. Moreover it would readily be possible (and very desirable) to add still further stretches of Crown land to the eastern extremity of the park.

To adopt this fine area as the site of a national park would, therefore, be easy. There would of course be problems of administration, control and development to be considered. It would seem clear that these could be the task of the National Parks Board, and it is highly satisfactory to be able to state that the Board takes a very encouraging view of the proposal and has already begun to investigate it.

Support for the scheme of a national park in the Outeniquas has come in the form of resolutions from several societies and bodies interested in the conservation of our natural wealth. The Royal Society has advocated the establishment of a national reserve in the Outeniquas, as mentioned above. The South African Association for the Advancement of Science has passed a resolution in favour of the national park idea. So has the South African Museums Association. The Forest Department is already taking active measures for the protection of the natural vegetation and of the herd of mountain zebra. The Animal Welfare Society (Wild Life Protection Committee), with its headquarters in Cape Town, has taken the leading part in bringing the proposal to the notice of the National Parks Board and in collecting information on the subject.

Memorandum to Board

To sum up, in the words of a memorandum presented to the National Parks Board:

The establishment of a national park in the Outeniquas would be (*a*) in keeping with the broadest ideals which have inspired the establishment of national parks in the United States and other countries; (*b*) a most valuable piece of work in the conservation of flora, fauna and scenery, and an object-lesson in the value of such conservation for the education and enjoyment of South Africans and visitors; (*c*) the means of saving the mountain zebra from threatened extinction and of encouraging the propagation of this and other game animals in the area; (*d*) the provision in the Cape Province of a true national park on the large scale, which up to the present the Province does not possess; and (*e*) a relatively very inexpensive project in view of the existing State ownership of much of the greatest part of the area proposed.

It is to be hoped that the National Parks Board and the Government Departments concerned (Lands and Forestry) will give the scheme the most thoughtful consideration in order to do the " big thing " and create a national park worthy of the country and its natural wealth of beauty and interest.

Some Impressions and Comparisons.

By H. HALL

HAVING spent many years in the cultivation of succulent plants almost entirely under artificial conditions in England, I find it of singular interest to be in South Africa where so many of them are part of the native flora. Broadly, South Africa and America are the two main areas where succulents are found in vast numbers. On the American continent, stretching from the Canadian border in the North, to the bleak plains of Patagonia in the South, can be found representatives of the Cactus family, comprising nearly 2,000 species of great diversity, all succulents and nearly all armed with spines to a greater or lesser degree. It is curious to note that although thousands of miles of ocean separate the two continents, very similar lines of development between types of totally unrelated plants may be noted, particularly with species of the genus Euphorbia.

Cactus plants are so essentially American that with perhaps two exceptions they are confined strictly to that continent and the adjacent islands. The existence of two species of Rhipsalis found in several coastal districts of Africa is one of the many botanical puzzles.

So firmly did the name Cactus become established in European vocabulary after their introduction about the middle of the 16th century, that most thorny succulents, in fact many other plants too, were called cactus plants. It survives to this day. Needless to say, there are many other succulents native to the Americas which are totally unrelated to them, the Yuccas, Agaves or " Century Plants ", Echeverias which are related to the vast Crassula family of South Africa, etc. By and large, all succulents inhabit areas which are subject to a periodicity of wet and dry seasons, few species being found where, as in the true tropics, rainfall is more or less spread evenly over the year.

Probably the first succulents from South Africa to reach Europe were those taken by the Dutch missionary Justus Heurnius, the earliest collector of Cape plants, about 1640. Many other collectors followed and gradually collections of these plants became established, so long ago as 1727 appearing the first book entirely about succulents other than Cacti, written by Richard Bradley who was a Professor of Botany at Cambridge.

Innumerable times I have been asked the question " Why do people grow succulents?" " What good are they?" was another pert query, and such questions were always difficult to answer. Whatever the reason one is safe in replying that the growing of plants " foreign " to one's own country has been one of man's idiosyncrasies from time immemorial; and after all, gardening is now said to be the most popular hobby in the world.

Since coming to Kirstenbosch several visitors have expressed astonishment when I have mentioned collections of succulents in England. " How on earth can they grow them there?" I was confronted with! It was myself who was the most astonished for there are well-known collections in England and Europe containing thousands of different species and for the benefit of readers I should like to state that, apart from the botanic gardens, the number of people that grow such plants as a hobby is probably a couple of thousand in the British Isles alone. In Britain the plants are invariably grown under glass all the year round and although most South African species do benefit from a couple of months in the open during summer it is not a popular practice, there being the risk of damage by storms, wind, dogs and cats, and the fear that they might not like it outdoors! It might surprise many people here to learn that the collection under my care in the north of England contained approximately 50 species of Aloe, about 60 Crassulas, a similar number of Euphorbias and nearly 400 species of Mesembryanthemums, as well as the smaller groups of succulent families; yet its fame lay in its Cactus plants more than in the other succulents. About ten years ago a young South African visitor was interested in the Conophytums there and was so astonished at the number of species that he burst out with—" I think you ought to start sending some of these back to South Africa!"

Greenhouse cultivation has at least one advantage, the water supply can be strictly controlled, can be given at the correct time to suit the various times of the year when the plants require it. This is perhaps the most important factor when one remembers that succulents from this country are found in summer and winter-rainfall areas. The healthiest plants were always seen in the clean air of country districts, yet very many were grown in towns and I may say that one of the finest collections of the dwarfer Mesems in England is housed in a small greenhouse built on the roof of a Soho warehouse in the heart of London, surrounded by chimneys " belching out all manner of filth and corruption ", as the owner aptly terms it.

It was my experience that South African succulents were more sensitive to the impure air of towns than were the Cactus plants but I do not suggest that this is one of the reasons why they are less popular than the American plants. That plants from this country are rather more difficult to keep dormant in winter goes without saying. Species of Cotyledon, especially those which are more or less deciduous in character would insist in growing new leaves only as the English summer was ending; consequently they suffered from lack of light and grew spindly in consequence. It is true that compared with the wild species here, our plants looked greener and better fed. They were much better fed, of course, and greener because they lacked that sunburn which goes with many things when living outdoors. Several kinds, especially those which live naturally in full sun, were inclined to elongate, as though in search of the light, whereas out on the veld they really do shrink down in the ground to expose the minimum surface to the burning rays. Now and then, exciting things would happen, such as when flowers first appeared on Sarcostemma viminale. This leafless climbing plant has a copious milky sap resembling Euphorbia, and for years it was known as Euphorbia pendula, undoubtedly because of its milky sap, and little known of its origin. Then, one summer, and in the Manchester collection, tiny starry flowers were observed and at once it was seen to be an Asclepiadaceous plant and not a Euphorbia at all. Since coming here I have had the pleasure of seeing their starry flowers myself, though they are not very showy, and better still, their Stapelia-like fruits on wild specimens near the Addo.

One's impressions upon seeing for the first time in the wild, plants long cultivated in greenhouses, are not easy to define; it is undoubtedly very exciting. A few days after my arrival I saw the whole landscape near Worcester tinted mauve with Mesembryanthemums, or so it seemed to me; Gazanias by the roadside in brilliant display, Dimorphothecas which looked quite unreal, and the intense blue sky above which contributed in no small measure to their splendour.

Near Worcester I was shown a Conophytum, my first view of a wild one, and it was growing in in-

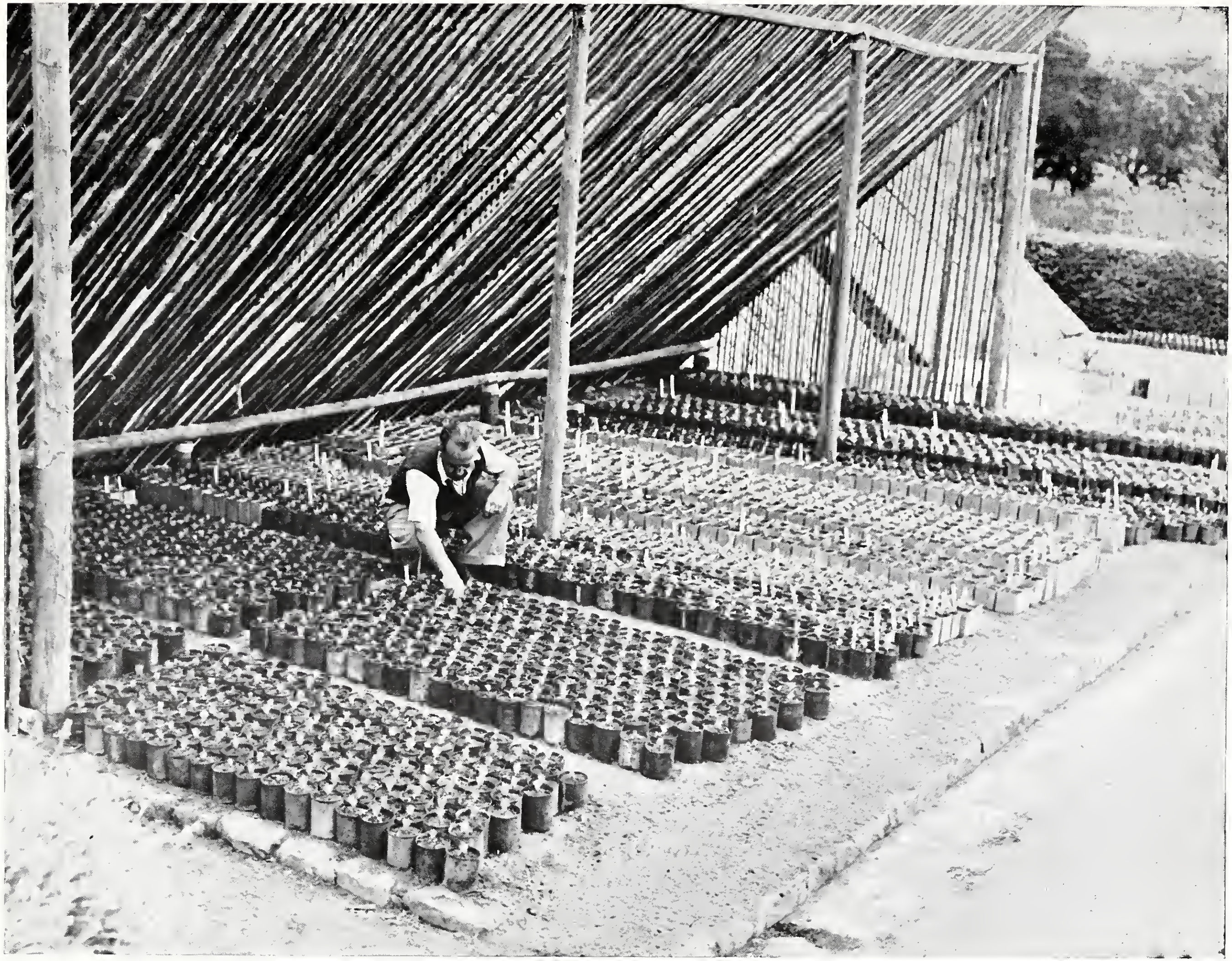

PLATE III. Seedlings of Proteaceae in the Nursery at Kirstenbosch. *Photo*: Blyth Clayton

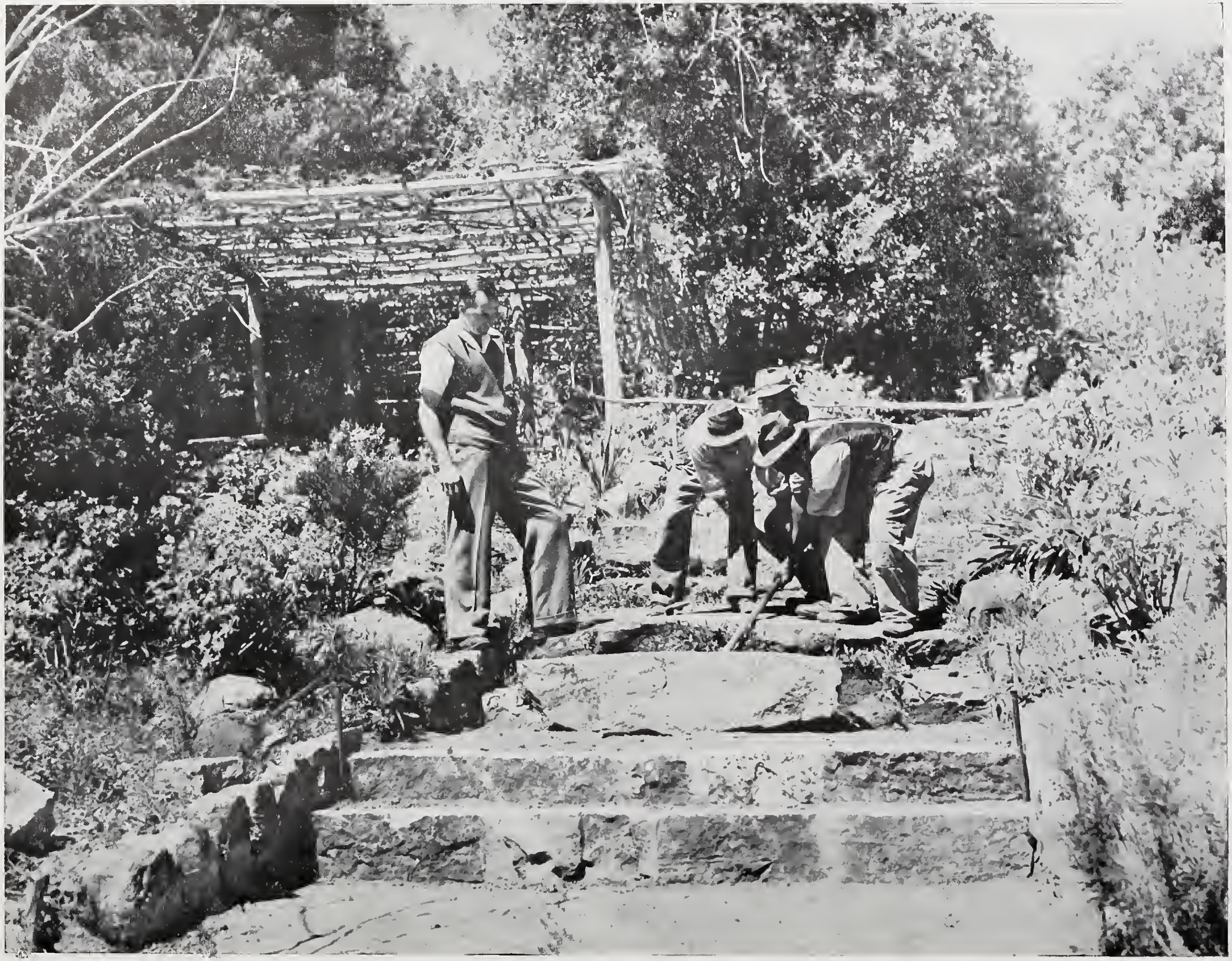

PLATE IV. Construction work in progress at Kirstenbosch.

Photo: Blyth Clayton

credible rock-crevices with no trace of soil as far as I could see. More recently I have seen another species which, perched on the very top of a granite hill in microscopic fissures, as grey in colour as the Lichen which also clung to the bald stone, seemed so far removed from one's pre-conceived notions of the plant's requirements that one felt like a learner all over again. In England we were so careful to mix up the orthodox loam, peat, lime-rubble and coarse sand for those things and I was looking at plants which lived happily without any of them. These dwarfs were exposed to all the burning sun, winds and winter rains, and at an altitude which would be classified as alpine in England. They must endure several degrees of frost too.

The first time I was in typical succulent veld I became a novice again. Though I knew some of the plants at once, I was passing others completely oblivious of their presence; the importance of protective colouring, the methods of utilising the shade of other plants, the deceptive shadows produced by the rocks and shrubs in the intense sunlight to which my eyes were wholly unfamiliar, all combined to deceive me. And thus I learned to seek beneath a small shrub for some things, on the cooler side of a slope for others. Amazing was to observe five unrelated succulents utilising the shade or the protection of one small shrub, all happily intermingled. The natural colouring observed with the species which grew amongst the stones in full sun was more intense than I would have believed. Unfortunately, this is gradually lost in cultivation in Europe, and even at Kirstenbosch it tones down considerably.

It has been particularly interesting to meet with an old favourite such as the scarlet Rochea in the wild state, on the slopes behind Kirstenbosch. Sometimes hanging by a mere thread of a root from rocky ledge, or on the very top of a crag with the south-easter battering them unmercifully and, it seems, quite ineffectually! Many times when visiting the Horticultural Hall in London I used to pass through a narrow street to admire small pots of the same Rochea for sale in a tiny florists. For a shilling or so one could get a plant with about six handsome spikes of flowers, and on well grown specimens, too. Though all the plants are sweet scented I did not find this so here, and I am wondering whether the perfume is lost in some of them because they are mostly grown from seeds here, as compared with the unvarying habit of "cuttings" in England, by which method a plant's characteristics are retained more permanently.

Another old favourite to be found in collections is the scarlet-flowered Crassula falcata which grows vigorously and flowers well in England. It can be increased so readily from cuttings, and even from portions of its grey leaves, that no-one bothers to utilise its seed. In Kirstenbosch I find that new stocks are raised from seeds regularly, one beneficial result being that a pest-free stock is obtained and, we must admit, a reinvigorated one. I have been impressed, however, with the variations shown by the plants here, some with bright green leaves, others with almost straight instead of the normal curved or falcate ones, as well as many intermediate forms. These are obviously variants and my guess is that hybridisation has taken place with the related C. perfoliata which has leaves of a similar colour to C. falcata but are not curved, its flowers being rather similar and produced about the same time. Regarding the occurrence of the bright green colour I have no guess to offer. I was very pleased to meet with a few scattered specimens of C. falcata in the wild somewhere near Uitenhage last December and they were all typical grey-leaved forms. When planted out in large groups, as in Kirstenbosch, they make a lovely splash of colour and seem to attract large numbers of the delightful Citrus Butterfly which may be seen hovering amongst them during the hot, summer days.

Some of the problems concerning the cultivation of succulents at Kirstenbosch are: —

1. A yearly rainfall considerably higher than that of their native locality generally.
2. A cool, wet winter and a dry, hot summer.
3. Plants which come from the summer rainfall areas or vice-versa.
4. Insect pests and fungus diseases.

As mentioned earlier, plants can be controlled more readily when grown entirely under glass, whereas, out in the open they must endure all weathers. It follows therefore, since we have many of the more specialised types which will not tolerate the heavy winter rains, these must be given some protection from excess moisture. During the winter months therefore, these are brought into the frames or greenhouses. In contrast to the summer months in England, for instance, when most of the year's growth is made, I find that our summer here seems to cause a diminution of growth is very many species, as if the intense sunlight were too much for them. With species from the winter rainfall areas this cessation of growth in summer is understood.

Generally speaking, a greenhouse is undoubtedly kinder to the smaller succulents than is their native locality. True, they are modified to keep dwarf and develop slowly, but they may be killed outright in drought years. It is not easy to retain either the natural size, nor the colouring of the veld plants after growing them in a garden for long because they always receive more water than they get in the wild. In cultivation many species will reach the flowering stage in a year from seed, the same probably requiring several years in the veld. As a matter of fact, I was very impressed with the dried-up appearance of all the plants in the veld. Admittedly it was high summer, when one expects this, but some species were such withered fragments they were hardly recognisable. Once of twice I have met with bits of Crassula lycopodioides and I mention this species because it is the commonest succulent in cultivation in Europe. Near Worcester I noticed it as dried-up, yellowish fragments; in the Little Karoo it was almost blue-grey with dryness. This same little plant is grown overseas as neat, emerald-green bushes about eight inches tall and is extremely popular. As a matter of fact, I know of several ranges of glasshouses at one establishment, each about 100 feet in length, devoted exclusively to this plant, destined to be sold by the thousand in the sixpenny Stores, etc.

Pests and diseases are, unfortunately, an integral part of horticulture, succulents being no exception. In England we had scale insects, mealy-bugs and the red-spider mite. We did not, however, have to deal with the hordes of jumping creatures with elephantine appetites and which show a morbid partiality for Mesem. flowers and leaves. In ignorance of their common names I call them all grass-hoppers but although there are many kinds and sizes they are all capable of leaping enormous distances when disturbed. Fortunately, we never met with the loathsome white grub which bores into the growing plants of most Aloes, gradually killing the growth, unless, as in some species, the plant is capable of developing side-shoots. Unfortunately, the damage is done before one sees any signs of the pest.

The dusky Stapelia Butterfly is not a yearly migrant to Britain, fortunately for Stapelia fanciers there. The caterpillars, pretty enough to interest the most indifferent entomologist, have voracious appetites, rapidly devour the stems and flower-buds of most plants of the Stapelia group. Perversely, they invariably select either a rare species or a specimen in short supply—but that is always the way with pests. They eat fast, grow fast and speedily pupate inside a rather lovely cocoon.

Another little stranger to me is a small, glossy black beetle which chews the leaves and young flowers of a few leafy species of Euphorbia, chiefly E. clava, clandestina and bubalina. Actually, the last-named species is so mutilated that it has evidently been unable to make any progress at all, for without leaves it cannot thrive. These beetles spring smartly to the ground when disturbed.

I was prepared for many surprises out here but the sight of a small plant of Aloe succotrina growing up in the fork of a tree on the mountain side above Kirstenbosch was something quite unexpected. It was a splendid example of a terrestrial plant turned epiphyte by accident, and of the small amount of food required to sustain life.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

ANNUAL REPORT, 1947.

Your Council has pleasure in submitting the Thirty-fourth Annual Report and Financial Statement of this Society for the year ended the 31st December, 1947.

Membership.—There has been a net gain in membership during the year, showing the continued interest in the work of the Society. The total number of Members at the end of 1947 is stated below, together with the corresponding figure for 1946, shown bracketed, viz.:—

	1947	(1946)
Life Members	121	(115)
Family Members	176	(164)
Ordinary Members	1,446	(1,345)
Associate Members	667	(625)
	2,410	(2,249)

Financial.—As shown by the audited accounts annexed hereto, the grant to Kirstenbosch for the year under review amounted to £1,270 10s. 6d. being £95 9s. 7d. less than the sum granted to the Gardens in the previous year. This decrease is mainly due to the larger sum received in 1946 from donations in response to the special appeal for support to Kirstenbosch which was launched during that year and to a smaller extent to the increased cost of printing and distributing the Society's Journal. The amount to the credit of the Life Members Fund at the end of 1947 was £2,190 as against £2,040 at the end of 1946, representing the subscriptions of six new Life Members. Investments total £3,644 19s. 4d. being £74 12s. 9d. more than the figure at 31st December, 1946.

Election of Office Bearers.—At the Annual General Meeting held on 12th May, 1947 the following office bearers were elected:—

President:—Mr. W. Duncan Baxter.

Vice-Presidents:—Professor R. H. Compton, Mr. C. J. Sibbett and the Right Honourable Mr. Justice E. F. Watermeyer.

Members of Council:—

Professor R. S. Adamson
Mrs. L. Bolus
Mrs. H. Burton
Mr. C. H. Clayton
Dr. E. L. Gill
Mr. F. A. C. Guthrie
Mr. G. P. le Sueur
Mrs. G. W. Lyon
Mr. N. S. Pillans
Mr. E. J. Scholtz
Miss E. L. Stephens
Mr. W. C. West
Mr. C. P. Gohl
Miss M. E. Johns
Miss G. J. Lewis
Miss K. Murray
Mr. H. N. Porter
Mr. H. C. Starke
Captain C. Struben
Dr. C. L. Wicht

There were five meetings of Council held during the year under review including a special meeting on 25th November to consider a memorandum prepared by Professor Compton in which, in view of the announcement by Mr. L. A. Solomon, Honorary Secretary and Treasurer, that he desired to resign from those offices at the end of the year, he proposed that the Society's office should be transferred to Kirstenbosch, with a view to closer liaison with the Staff of the Gardens and the better to contact visitors. He also submitted an architect's plan of the building which would be required to house the Society's office in the Gardens. At a further meeting of Council it was unanimously decided to assign the sum of £500, the estimated cost of the building, from the Life Members Fund as the Society's contribution towards the cost. At the same Meeting the engagement of Mrs. W. N. Hall as Secretary and Treasurer on a part-time basis was agreed to; a vote of thanks to Mr. Solomon for his services to the Society over a long period of years was unanimously carried; and the proposals by Miss M. E. Johns for demonstrations in the Gardens in 1948 of compost making, etc. were approved.

Journal of the Botanical Society. — Part XXXII of the Society's Journal, edited by Professor Compton, was published during the year and issued to all Members, Learned Societies, etc. Part XXXIII, to be issued during 1948, will contain this Report and Accounts.

Distribution of Seeds.—During the year 659 parcels, comprising 9808 packets of seed, were distributed from Kirstenbosch, this being a considerable increase over the previous year. Many reports of satisfactory germination were received from Members.

Visitors to Kirstenbosch.—It has been impracticable to make records of the number of visitors to the Gardens, but it is clear that greater numbers than ever before have entered the gates. This applies particularly to other seasons than the Spring. The parking area has been inadequate on several occasions and many cars have had to be excluded. A considerable number of overseas people, often with introductions, have visited the Gardens and shown much interest. The Tea-House has been largely patronised and continues to be a valuable amenity.

Karoo Garden.—The sum of £173 5s. 0d. was subscribed by Members during the year, being an increase of £21 11s. 0d. over the amount received during 1946. The site at Worcester is now substantially fenced throughout, a nursery, shadehouse and workshed have been established, a water supply obtained, and a start has been made in erecting a house for the Curator. Good progress was made with the layout and planting and valuable material has been received and is being propagated. It is hoped to have a formal opening of the Garden in 1948.

Wild Flowers Protection Section.—Membership of the Section stands at 317. The annual report of the committee is annexed and will be printed in the next issue (No. XXXIII) of the Society's Journal.

Annual Gathering, 1947.—This was held in fine weather on the morning of Saturday, 27th September and was well attended.

Obituary.—Your Council desires to express deep regret at the passing of 27 Members of the Society during the year, to whose relatives, where known, letters of condolence have been sent.

Thanks.—Your Council wishes to express its appreciation of the kindness and courtesy of the South African Association for the free use of its board room for meetings of Council and the Wild Flowers Protection Committee, to the Provincial Administration for similar facilities, and to the daily Press for its co-operation in reporting the proceedings of the Society. It also wishes to thank those Institutions and firms who have this year, as in the past, advertised in the Society's Journal, thereby materially reducing the cost of production.

C. J. Sibbett,
Chairman.
L. A. Solomon,
Hon. Secretary and Treasurer.

Report by the Wild Flowers Protection Section Committee for the Year Ending 31st December, 1947.

Two meetings of the Committee were held during the year.

Illegal Sale of Wild Flowers.—As stated in the last annual report, the police were at present unable to give effect to their promise with regard to the appointment and training of officers whose special duty it should be to enforce the Wild Flower Protection Ordinance. In view of this the Committee decided, as an interim measure, to appoint its own officer to assist in the desired direction, it being understood that consideration would be given by the police authorities to the matter as soon as circumstances permit.

Accordingly, in the month of April 1947, ex-Sergeant H. D. W. Meyer commenced his duties in the service of the Wild Flowers Protection Committee, these being the enforcement of the regulations issued under the Wild Flowers Protection Ordinance. In August, he was appointed a special constable by the Commissioner of Police. Before retiring from the police on pension, Sergeant Meyer had, for a long period, been responsible for the duties pertaining to the administration of the W.F.P. Ordinance and Regulations, and is fully conversant with the provisions thereof and possesses the knowledge necessary for the identification of protected species.

He has shown commendable interest and enthusiasm in his work and has supplied regular written reports of his activities. The convictions obtained through his efforts amount to nearly 200, and as the scale of fines has been raised considerably, the result as a whole have been most satisfactory. Very few protected flowers are ever exposed for sale and the majority of the later convictions are for selling wild flowers in unauthorised places. Further, Sergeant Meyer has secured the assistance and co-operation of the law-abiding sellers, who provide useful information and who resent the intrusion of the law-breakers. The very fact that it is known an inspector is operating has a deterrent effect. There is no doubt that the engagement of Sergeant Meyer was a wise one.

Sergeant Meyer is paid a small salary by the Committee for his services, and this is supplemented to some extent by the witness fees he earns when attending court cases.

This work is necessarily confined to the Cape Peninsula, but has its effect in reducing the illicit gathering of wild flowers for a considerable radius around Cape Town.

The Committee has not so far been able to tackle the problem of wild flower destruction in other districts; nor has it been able to deal effectively with the export of wild flowers from the Cape to other Provinces, which takes place contrary to the Ordinance and sometimes under permit from the Administration.

Administration of Ordinance.—The Committee has given advice on request to the Provincial authorities in connection with applications for permits under the Ordinance.

General.—The Membership of the Section stands at 317, this being a net loss of 7 during the year. The amount to the credit of the section at 31st December 1947 was £548 1s. 7d.—this compares with £532 10s. 9d. at the end of 1946.

The following were elected by Council as members of the Committee:—

Professor R. H. Compton (Chairman)
Mrs. H. N. Burton
Mr. D. R. de Wet
Mr. W. C. West
Mr. C. J. Sibbett
Mrs. L. Bolus
Mr. C. H. Clayton
Mr. E. J. Scholtz

The following were co-opted as members by the Committee:—

Dr. E. L. Gill
Miss M. E. Johns
Miss K. Murray
Senator M. J. van Breda
Mr. C. R. Gohl
Mrs. G. W. Lyon
Mr. H. N. Porter

The thanks of the Committee are accorded to the South African Association for the use of its board room for meetings, and also to the Cape Provincial Administration for similar facilities.

R. H. Compton,
Chairman.

L. A. Solomon,
Hon. Secretary and Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

INCOME and EXPENDITURE ACCOUNT for the 12 months ended the 31st December, 1947.

	£ s. d.	£ s. d.
To General Expenses		4 14 6
„ Honorarium to Secretary and Treasurer		126 0 0
„ Bank Charges		5 16 5
„ Stationery and Printing		70 3 9
„ Postages and Receipts		21 2 1
„ Gathering at Kirstenbosch		8 9 9
„ Seed Lists, Duplicating, Postage, etc.		30 0 5
„ Journal Part XXXII (1946) Printing, Dispatching, Postage, etc.	215 15 0	
Less: Received from Advertisements	59 0 0	
		156 15 0
„ Surplus for year 1947		1,270 10 6
		£1,693 12 4

	£ s. d.	£ s. d.
By Subscriptions:—		
Family Members	306 8 0	
Ordinary Members	1,115 14 9	
Associate Members	137 17 0	
		1,559 19 9
„ Donations		46 12 10
„ Interest on Investments		84 11 9
„ Sales of Journal		1 12 0
„ Sales of Mathews' "S.A. Plants"		16 0
		£1,693 12 4

BALANCE SHEET as at 31st DECEMBER, 1947

				£	s.	d.	£	s.	d.
Life Members Fund as at 31.12.46				2,040	0	0			
Received during 1947				150	0	0			
							2,190	0	0
Subscriptions paid in advance ..							143	9	9
Subscriptions to the Karoo Garden:									
Balance as at 31.12.46				155	19	6			
Received during 1947				173	5	0			
				329	4	6			
Less: Paid to National Botanic Gardens				155	19	6			
							173	5	0
Subscriptions to the Wild Flower Protection Section:									
Balance as at 31.12.46				532	10	9			
Subscriptions received during 1947				76	16	7			
Interest earned during 1947 ..				10	1	9			
				619	9	1			
Less: 5% of 1947 Subscriptions credited to General Administration Expenses ..	£3	16	10						
Paid to Mr. H. D. W. Meyer for part-time services ..	61	0	0						
Stationery, Printing, Postages, Bank charges, etc. ..	6	10	8						
				71	7	6			
							548	1	7
Bailey-Taylor Show Card Issue:									
Amount in hand							6	7	7
National Botanic Gardens:									
Surplus for 1947							1,270	10	5
							£4,331	14	5

	£	s.	d.	£	s.	d.
Cape of Good Hope Savings Bank:						
Deposit with Interest at 3% p.a. to 31.12.47				670	1	6
Post Office Savings Bank:						
Deposit with Interest at 3% p.a. to 31.12.47				1,010	0	0
United Building Society:						
Fixed Deposit for 12 months with Interest at 3% p.a. to 31.12.47	469	19	10			
Savings Bank Account with Interest at 2% p.a. to 15.11.47	416	5	6			
				886	5	4
S.A. Permanent Building Society:						
Fixed Deposit for 12 months with Interest at 3% to 31.12.47	383	14	10			
Fixed Deposit for 12 months with Interest at 3% p.a. to 31.12.47	704	17	8			
				1,088	12	6
Wild Flower Protection Section:						
Fixed Deposit for 12 months with the S.A. Permanent Building Society, with Interest at 3% p.a. to 31.12.47	238	9	6			
Fixed Deposit for 12 months with the S.A. Permanent Building Society, with Interest at 3% p.a. to 31.12.47	108	17	1			
Cash at the Standard Bank of S. Africa	210	8	9			
	557	15	4			
Less: Amount due to General Account	9	13	9			
				548	1	7
General Account:						
Cash at Standard Bank of S. Africa	117	2	9			
Amount due from Wild Flower Section	9	13	9			
Mathews' "S.A. Plants", Stock in hand at cost	1	17	0			
				128	13	6
				£4,331	14	5

I have examined the Books, Accounts and Vouchers of the Society for the year ended 31st December, 1947, and have obtained all the information and explanations I have required. I have satisfied myself of the existence of securities. Proper Books and Accounts have been kept. In my opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs according to the best of my knowledge, the explanations given to me and as shown by the books of the Society.

(Sgd.) CECIL J. SIBBETT, Chairman.
(Sgd.) L. A. SOLOMON, Treasurer.

R. M. JOUBERT,
Chartered Accountant (S.A.),
Incorporated Accountant.

19th February, 1948,
Cape Town.

New Members of the Botanical Society.
1947.

(LIFE MEMBERS: FAMILY MEMBERS: Ordinary Members: *Associates*)

The star (*) indicates Members who are also Subscribers to the Karoo Garden.
The cross (†) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccuracy in the following list it is requested that notification should be made to the Secretary, Mrs. W. N. Hall, The Botanical Society of South Africa, Kirstenbosch, Newlands, C.P.

A

*†Adams, H. W.
Adelson, Mrs. T.
Alexander, Dr. W. S.
Anderson, Miss I. C.
Anderton, T. D.
Austin, Mrs. E. M.

B

Baillie, Mrs. S. A.
Ball, Miss J.
Ballack, Mrs. I.
Barker, Miss B. E. J.
Barnes, Mrs. H.
Bett, Miss J.
†Black, Miss G. E.
Blake, Mrs. R. G.
Blyth, Mrs. E.
Bravington, Mrs. N.
Bremner, Miss G.
†*Brenac, A.*
Bridgman, Mrs. H. M.
Brink, Mrs. C. H.
*Brinton, Mrs. L. K.
*Brody, P. F.
BRODY, P. L. C.
Brown, Mrs. T.
*†BUTCHER, MRS. J.
Butters, Capt. W. R.

C

*Campbell, Senator W. M. H.
CARISS, MRS. F.
Carst, P. T.
Carter, Mrs. L.
*†CHANEY, MRS. M.
Chaplin, Miss M.
Church, Mrs. E. H.
Clemence, S. H.
Clothier, Mrs. E.
Coates, P. A.
*†Coghlan, G. W.
Coles, C. L.
Collins, Mrs. J. P.
Cooke, T. H.
*COOPER, MR. AND MRS. R. A.
CORBETT, A. F.
Curwen, Rev. R. B.
Cretikos, Mrs. G. M.

D

Danziger, H.
David, H.
Davie, Mr. and Mrs M. B.
*de la Bat, G.
*Dersley, R. A.
*DE SOUSA, DR. C. W. L.
Dicey, Mrs. A. M.
Dock, Mrs.
Dower, Mrs. R. R.
Dowler, L. S.
Dowler, R. H.
*Dubois, A. R.
Dysart-Sloss, Mrs. K.

E

Edelstein, A. W.
Edwards, Miss G. F.
Elliott, Mrs. D.
*†ELOFF, DR. G.
English, J. M.
Errey, G.

F

Forman, Mrs. E. McH.
Foster, Mrs. C. H.
*Francis, H. O.
*Freestone, Miss D.
Freyer, Mrs. H.
Frielinghaus, Mrs. H. O.
Friendly, Mrs. I.
Fuchs, A. S.

G

Galloway, Dr. A. G.
Gaynor, M. V.
Gibson, Mrs. K.
Gilbert, H. W.
Glade, G. G.
Godlonton, Miss E.
Goemans, J.
Goemans, Jos.
Goldburgh, Mrs. B.
Goodricke, Mrs. G.
Goodwin, A. R.
Gordon, Mrs. M.
Gore, R.
Goudvis, Mrs. S.
Gould, W. H.
Gow, C. E.
Gow, Miss J. A.
Gray, D.

H

HALL, MAJOR B.
HALL, H.
*Hamilton, M. D.
Hands, Miss M. E.
Harris, Mrs. C. E.
†Harris, Mrs. F. R.
Harvey, G. E.
Haslam, Miss M. E.
Hastings, Mrs. V.
Haw, Mrs. A. B.
*†Hazell, Mrs. E.
Heber-Percy, B.
HEGINBOTHAM, B. W.
Helders, J.
Hepker, Miss E. J.
*Higgins, Mrs. V.
HILL, MRS. C. M.
Hill-Dillon, Mrs. S. S.
*Hirschfield, Dr. S. M.
Hiscox, Mrs. M.
*Hoare, B. G. W.
*Hodges, G. H.
Hogg, Mrs. D. C.
Holtz, Dr. D.
HOULT, COLONEL J. M.
Hudson, Mrs. F. H.
Hulett, Mrs. W. H.
HULME, J.
Human, Miss E. M.
Hutchison, P. C.

J

Jacob, Mrs. S.
James, Mrs. R. A.
Jeffcoat, Mrs. M. B.
Johnstone, Miss A. L.
Joubert, Mev. C.

K

Keal, Mrs. S.
Kennedy, Mrs. E. G.
Kitching, Miss B. W.
Kleinschmidt, Mrs. P.
*KNOTT, E.
Kohn, Mrs. K.
*Konson, Mrs. J. M.
Kupferberg, Mrs. L.

L

Lake, Mrs. Z.
Lamont, P. A.
Laughton, Mrs. S. M.
Lear, J. D.
Liddell, Professor
*†LINLEY, J. S.
LION MATCH CO., LTD.
Lloyd, Mrs. A. P.
Lorent, V.
Louw, A. A.

M

MacCrone, Mrs.
MacKay, Mrs. J. G.
Malherbe, Miss M. M.
Mathews, Mrs. C. E.
Meldal-Johnsen, Miss D.
MENDELSOHN, B.
*†Menzies, J. S.
Merchant, Mr. and Mrs. H. A.
*†MERRETT, P.
Michel, I.
MIDDLEMOST, S. H.
Millar, Mrs. I.
Millar, Mrs. R. C.
Miller Gardens, Calif.
Mitchell, Mrs. J.
†Molteno, J.
Moodie, Mrs.
*Moreillon, Rev. B.
Morton, Mrs. A. B.
*Murray, I.
Murrell, Mrs. R.
Myburgh, Mrs. I.

N

Nicholson, R. U.
Ninow, F. W.
Norton, P. F.

O

O'Connor, E. R. C.
†*Osler, G. C.*

P

Paterson Mrs. L.
Pearce, Mrs. B. J. W.
Pearne, C. H. & Co.
*Peltrett, C. A.
Petersen, Mrs. N.
*Philemotte, Professor V. G.
Phillips, Mrs. H.
PIM, MISS J.
Pincus, Mrs. F.
Podlashuk, Mrs. F.
Purvis, Captain J. G.
Pyper, Mev. S.

R

Ratcliffe, Mrs. E. T.
Reavy, F. E. H.
Reid, C. W.
Rigg, Mrs. L.
*Roan, H. M.
Rose, H. E. J.
Rouillard, Miss G.
Russell, Mrs. E. E.

S

Scholtz, Mrs. R. W.
Schultze, C. F. M.
Seccombe, Mrs. A. M.
Shaw, C. J.
Short, Miss G. C.
*SHURLY, E.
*SHURLY, MRS. D. F.
Silver, M.
*Simpson, J. S. M.
Simson, G. M.
Singer, Mrs. A.
Smit, Mrs. G.
SMITH, C. & SONS
Smuts, Dr. N. R.
Sneddon, G.
Snell, A.
Sopper, Lt.-Col. F. W.
*S. Rhodesia Succulent & Native Plant Soc.
Starfield, Mrs. H.
Stephan, A. F.
Stern, M. F.
Sternweiler, Mrs. H.
Steyn, Mrs. A.
Stinton, F. W.
Sturrock, L.
*Sutherland, D. A.

T

Tame, R. K. T.
Tasker, J.
Taylor, Mrs. C.
*Taylor, L. E.
Teubes, Miss E.
Thal, A.
Thorsen, Mrs. N.
Tulleken, Sister M.
*Turnber, W. E. J.

U

United Building Society

V

Vallance, Mrs. M. D.
van Blerk, Mrs. A. C.
van Blommestein, Mrs. A. M.
van der Bijl, Mrs. H.
van der Riet, E. F.
*van Geuns, J.
†Vibart, Mrs. D. L.
VIGNE, C.

W

Wagener, G. B.
*Walden, K. H.
WELLS, DR. A. Q.
Westlake Golf Club
Wide, Dr. E.
Wier, Major A. F.
Wilkie, Mrs. W.
Wilson, Mrs. H. D.
Wilson, H. E.
Wolff, F. M.
Wolff, Mrs. M.
Wolfowitz, Mrs. N.
Wood, Miss J. E.
Woolam, Mrs. J. L.
Worms, Mrs. J.

Z

Zeidenberg, D.
Zerbst, Mrs. L.
ZOCCOLA, A. R.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

OBJECTS:

(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch, and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

FOUNDED JUNE 10th, 1913.

President:
W. DUNCAN BAXTER, Esq.

Vice-Presidents:
C. J. SIBBETT, Esq.; PROFESSOR R. H. COMPTON;
RT. HON. CHIEF JUSTICE E. F. WATERMEYER.

Chairman of Council: C. J. SIBBETT, Esq.

Secretary and Treasurer: Mrs. W. N. HALL.

Council:

Professor R. S. Adamson.
Sir Alfred Beit.
Col. A. A. Beck.
Mrs. F. Bolus.
C. H. Clayton, Esq.
Dr. E. L. Gill.
C. R. Gohl, Esq.
F. A. C. Guthrie, Esq.
Miss M. E. Johns.
G. F. le Sueur, Esq.
Miss G. J. Lewis.
Mrs. G. W. Lyon.
Miss K. Murray.
N. S. Pillans, Esq.
H. Porter, Esq.
E. J. Scholtz, Esq.
L. A. Solomon, Esq.
Miss E. L. Stephens.
Captain C. Struben.
W. C. West, Esq.

Terms of Membership:

Life Members, subscribing not less than £25.
Family Members, subscribing not less than £2 2s. per annum.
Ordinary Members, subscribing not less than £1 1s. per annum.
Associate Members, subscribing not less than 5s. per annum.

Associate Members enjoy all the privileges of Membership except that they do not vote at any of the Society's Meetings. New Associate Members are residents of the Union only.

Honorary Members may be elected at a Meeting of the Society on the nomination of the Council.

All members have the privilege of sharing in the free distribution of surplus seeds from Kirstenbosch, on application to the Director of the Gardens. The Journal of the Botanical Society, published annually, is sent free to every Member. The Journal of South African Botany can be purchased by Members at reduced rates.

Life, Family, Ordinary and Associate Members who wish to support the Wild Flower Protection Section of the Society may give an annual subscription of 5s. per annum in addition to the subscription for the class to which they belong.

Life, Family, and Ordinary Members may pay an additional subscription of 10s. per annum, the proceeds of which will support the Karoo Garden, Worcester: such Members have the further privilege of receiving seeds from Worcester as well as from Kirstenbosch. (This privilege is temporarily suspended).

Those wishing to become Members of the Society are invited to communicate with the Secretary, Mrs. W. N. HALL, Botanical Society of South Africa, Kirstenbosch, Newlands, C.P.

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M.A., F.R.S.S.Af., Director of the
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Part XXXIV. 1948

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Published under the authority of the Council of the Botanical Society

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PLATE I. Frontispiece. The Society's New Office at Kirstenbosch.

The Journal of the Botanical Society of South Africa.

Edited by R. H. Compton.

PART XXXIV 1948

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Photographs by Blyth Clayton

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News and Notes

THE new Office of the Botanical Society has now been built at Kirstenbosch, and occupies a position near the Tea House and the parking area. This will act as an Information Office as well as a centre for the enrolment of Members of the Society. The Hon. Secretary, Mrs. W. N. Hall, will be pleased to assist Members in any way possible, and they are invited to bring in new Members or to suggest the names of persons whom they think likely to be willing to join if approached. The new Office will provide an invaluable means of contact between the Society and Members and also with the general public, and encouraging results have already been obtained.

* * * * *

The membership of the Botanical Society increased markedly during 1948, as the list of new members printed on a later page will show. On the other hand, a considerable number of former members have lapsed owing to non-payment of subscriptions, a two years' limit on arrears being now enforced.

* * * * *

The experiment is being tried in 1949 of issuing a Membership Card to Members of the Botanical Society. On this is printed the various fixtures which have been arranged for Members and their friends during the year. Members should carefully retain their cards, and diarise their fixtures, as, beyond a notice in the press, no further reminders will be issued. This arrangement has been made in order to reduce the considerable expense in time and money involved in sending individual notices to Members on each occasion.

* * * * *

The decision to transfer the Karoo Garden from Whitehill to Worcester was taken in 1945, and after three years of preliminary work the new Garden reached the stage of development at which it could be officially opened. The ceremony was performed by H.E. the Governor-General on 25th September, 1948. A civic luncheon was given by the Mayor and Town Council of Worcester, at which nearly 200 guests were present. Afterwards the party went to the Garden, and His Excellency, who was accompanied by Mrs. van Zyl, addressed a large gathering from the stoep of the Curator's house. He was then shown round the Garden and took note of the progress that had been made since the time when, as one of the Trustees of the National Botanic Gardens, he had taken part in its original foundation. Tea was then served by a Worcester Ladies' Committee, this bringing to an end the afternoon, which was marked by ideal weather, and which was successful in every way.

* * * * *

Among the guests present at the Official Opening of the Karoo Garden were the Minister of Education, Dr. A. J. Stals, and Mrs. Stals; the Minister for the Interior, Dr. T. E. Dönges, and Mrs. Dönges; Field-Marshal J. C. Smuts, Senator and Mrs. C. F. Clarkson, the Secretary for Education, Mr. A. Roberts, and Mrs. Roberts, and the Mayors of several of the neighbouring towns. Speeches were made by Mr. W. Duncan Baxter, Chairman of the Trustees of the National Botanic Gardens, Dr. Stals, Dr. Dönges and Field-Marshal Smuts. The speeches of His Excellency the Governor-General, delivered at the Garden, and of Mr. Duncan Baxter, who replied to the toast of " The Karoo Garden " at the civic luncheon, are printed in this JOURNAL. Mr. Duncan Baxter in his speech gave an account of the founding and purpose of the National Botanic Gardens which may be a record of value in years to come. As perhaps the only survivor of those who were connected in any official capacity with the founding of Kirstenbosch, and as one of the Trustees since the establishment of the Gardens in 1913, Mr. Baxter speaks with authority, and we are glad that the JOURNAL should be the medium of making public his statement.

* * * * *

The Seed Lists issued to Members of the Botanical Society are mere lists of names, and many Members ask for descriptions and advice on how to grow the plants whose seed they receive. Mr. J. W. Mathews' " Cultivation of Non-Succulent South African Plants " gives valuable information on many Kirstenbosch-grown plants: a few copies of this are still obtainable from the Secretary of the Botanical Society at 2s. post free. Moreover, the special cultivation of certain groups of indigenous plants has been dealt with in past issues of the JOURNAL, and some of these are also procurable. An article in more general terms, written by Mr. H. F. Werner, Curator of Kirstenbosch, is printed in this issue of the Journal and will also be available as a reprint. Members are advised to use this as a companion to the Seed List to answer their problems with regard to methods and times of sowing, transplantation, etc.

* * * * *

Mr. H. Hall, who is in charge of the collection of Succulents at Kirstenbosch, contributes an article to this Journal on the Cultivation of Succulents in South Africa. Since the war there has been a revival of interest in these plants, in which South Africa is so particularly rich, and Mr. Hall's article will be found of value both to beginners and to old hands in what is one of the most fascinating of all subjects for collection and study.

* * * * *

Until recently seeds of succulents could only be obtained from the National Botanic Gardens by those members of the Botanical Society who paid the additional subscription in support of the Karoo Garden. The newly adopted regulations for membership now place the seeds of succulents on an equal footing with those of other plants: that is, a Member can if he wishes choose his quota of free seeds from the succulents alone, this being a valuable privilege to those who specialise in this group. This arrangement is made possible owing to the developments in succulent growing at Kirstenbosch and the increased seed production at the Karoo Garden, Worcester.

* * * * *

Readers are asked to note that many back numbers of this Journal and reprints of articles on botanical and gardening subjects are available at very low prices, and can be sent by post or obtained at the Hon. Secretary's Office at Kirstenbosch. Lists of those available are printed on later pages of this issue.

* * * * *

The Kirstenbosch Library has received many books on botany and horticulture from kind donors in the past, and it is thought that many Members of the Botanical Society and others may have books on these subjects which they would like to present to the Gardens, where they would be greatly appreciated. The Library is growing steadily by exchange and, to a limited extent, by purchase of essential books, and it contains sets of many periodicals which are not found in other libraries in the Union.

Members of the Botanical Society will greatly lighten the arduous duties of the Hon. Secretary and Treasurer if they pay their annual subscriptions at the earliest possible moment, without waiting for a second or third reminder. Those Members whose subscriptions for 1948 are still outstanding are specially urged to postpone their payment no longer. The financial position of the Society, and therefore of the Gardens, would be much improved and the amount of office work would be considerably lessened if all subscriptions were paid promptly.

* * * * *

Attention is called to the recent change in the constitution of the Botanical Society whereby Ordinary and Family Members of 20 years' standing may become Life Members for a single payment of £10.

* * * * *

At the end of 1948 the Gardens staff met in the Lecture Hall to extend their good wishes to Miss M. E. Thesen, as she was leaving to marry Mr. Colin Tose in January, 1949. At the beginning of 1938 Miss Thesen was appointed to the post of assistant teacher in the Gardens by the Cape School Board. In October, 1940, she was granted special leave to go on active service, and was soon drafted up north to Egypt, and later to Italy. While in Italy Miss Thesen was seconded for special Red Cross work, and was mentioned in despatches. In March, 1946, she resumed her teaching appointment and soon settled down to the task of efficiently handling about 1,000 children each school term on their educational visits to the Gardens. Our best wishes go to her in her new sphere of life, and we know that her interest in the Gardens and its progress will remain through her continued membership of the Botanical Society.

* * * * *

A South African branch of the National Cactus and Succulent Society (headquarters in England) has been formed, and those interested may apply to Mr. C. H. A. Damant, 87, St. Patrick's Road, Upper Houghton, Johannesburg, for particulars.

* * * * *

The Divisional Council of the Cape has established a Bird Sanctuary in Ronde Vlei and its surroundings —one of the most remarkable areas for migratory aquatic and other birds in the Union. This is being fenced, and a warden is to be appointed. The Sanctuary is being controlled through an advisory board which includes scientific ornithologists, and steps are being taken to ensure that recent alterations in the natural drainage system of the Cape Flats and vleis will not prejudice its bird life. The Cape Divisional Council is to be congratulated on this further step—following the establishment of the Cape of Good Hope Nature Reserve—in the preservation of the much-threatened wild life of the Peninsula and its vicinity.

* * * * *

In the House of Assembly the Minister of Lands has stated that he is in favour of the establishment of a Mountain Zebra National Park in the Outeniquas. The Forest Department has expressed its willingness to hand over a considerable area (about 12,000 morgen) of land on the northern slopes of the range to the National Parks Board for this purpose. While it would seem that the full scheme, comprising the southern slopes as well, is not likely to be attained at present, it is satisfactory to know that part of it has every prospect of being adopted. It will be recalled that the establishment of an Outeniqua National Park was the subject of an article in the last issue of this Journal, and that it has been advocated for many years by the Animal Welfare Society, the Botanical Society, the S.A. Association for the Advancement of Science, the Wild Life Protection Society, the Museums Association and other bodies.

* * * * *

The Minister of Lands, following the resolution of a special conference held in Pretoria in 1947, has established the Scientific Advisory Council for National Parks and Nature Reserves. This body, which is representative of botany, zoology, geology and agronomy, held its first meeting in April, 1949. Its function will be to advise, from the scientific angle, on the various problems involved in the management of the Union's nature reservations, whose boards are often composed entirely of non-scientific members. Dr. Bigalke, Director of the National Zoological Gardens, was elected Chairman of the Council, and the Department of Lands will carry out its secretarial work.

* * * * *

We have pleasure in calling attention to the recently published book by Miss K. C. Stanford entitled " A Garden of South African Flowers ". Miss Stanford is well known as a grower of indigenous plants, especially bulbs, in her nursery at Bloem Erf, near Stellenbosch: her book is a pleasantly written account, in the form of a year's cycle, of her plants and her experience, and contains much of interest, as well as several photographic plates.

For several years work has been in progress on the " Flora of the Cape Peninsula ", the first complete regional flora to be written in the Union. This is a work of considerable magnitude, and it is expected that the book will be one of about 800 pages, containing full descriptions of all the genera and species with analytical keys. The leading part in the work has been taken by Professor R. S. Adamson, Captain T. M. Salter and Dr. Margaret R. Levyns, who have had the collaboration of specialists in certain groups. The manuscript is now in the hands of the printers, The Rustica Press, and publication is expected by the end of 1949.

* * * * *

A book of colour drawings of Cape Peninsula flowering plants by Miss Mary Maytham (Mrs. Hubert Kidd) is being produced by the Oxford University Press, and is expected to be ready by the end of 1949. This will comprise illustrations of about 900 flowers, and will be a useful companion to the " Flora of the Cape Peninsula " mentioned in the previous paragraph.

* * * * *

" The Wild Flowers of the South-Western Cape ", to consist of about 288 colour-plates from drawings by Mrs. E. Garrett Rice, has been greatly delayed in publication owing to the difficulty in financing so expensive a production in a period of constantly rising costs. It is impossible at present to issue a prospectus, but the sub-committee of the Botanical Society, which has the matter in hand, is actively studying the problem and may be able to take a definite step before long.

* * * * *

The Minister of Union Education appointed a Commission of Enquiry into the affairs of the Museums and other State-aided institutions (of which the National Botanic Gardens is one), and this has taken evidence in the early months of 1949. It is clear from the statements which have been laid before the South African Museums Association and conveyed to the Commission that no satisfactory solution to the problem facing every such institution in the country can be expected without a very considerable improvement in their financial basis. Necessary assistance has been delayed to a point at which some of the institutions are already seriously overdrawn, and others (including the National Botanic Gardens) are rapidly approaching the same deplorable condition. The other topics in the Commission's terms of reference are of insignificance in comparison with this alarming financial plight in which the various institutions find themselves.

* * * * *

We congratulate Mr. G. G. Smith, Chairman of the Trustees of the East London Museum, and Miss M. Courtenay-Latimer, its Director, on the beginning of the erection of their new Museum building. The present building, thanks to the energy of the Museum management, has become inadequate for its purpose, and the new building will provide much more space and a better setting for its many treasures.

Of these, of course, the chief is the " living fossil " fish, named *Latimeria* after the Director, whose discovery astonished the biological world, and of which the East London Museum possesses the only known specimen.

* * * * *

In the botanical sphere another " living fossil " has been recently discovered in the Szechuan province of China: this is a relation of the American Sequoias (the Californian Redwood and the Mammoth Tree of the Sierra Nevada), and belongs to a genus previously only known as a Mesozoic fossil. It has received the sesquipedalian name of *Metasequoia glyptostroboides*, and is a good-sized tree which is only known in one small district, and which (as one might expect) is being exploited for building purposes. Seeds have been obtained by the Arnold Arboretum, and some have been received at Kirstenbosch and distributed thence in the Union.

Seeds of exotic plants are often sent to Kirstenbosch, and the seed lists of many other botanic gardens are received there. While the Gardens themselves are confined to South African plants (even this being far more than they can adequately cope with), it is possible that Members of the Botanical Society may be interested in particular exotics and that the Garden may be able to help to obtain seeds for them. Any requests, however, must be definite and specific.

* * * * *

The Royal Horticultural Society is interested in obtaining living plants from high altitudes in Basutoland with a view to cultivation, it being thought that such plants would be likely to be hardy in English gardens. Professor Compton has made three short expeditions to Basutoland during the summer, and has collected at altitudes of over 10,000 feet; the plants are being grown at Kirstenbosch, and the first consignment was sent by air-freight to the Royal Horticultural Society's Gardens at Wisley at the end of April; others will follow later.

* * * * *

The Director of the National Botanic Gardens, Professor R. H. Compton, has been granted furlough by the Trustees and the University, and is going to Europe in May, 1949, accompanied by Mrs. Compton. He hopes to return to Kirstenbosch in September. During his absence his Gardens duties will be undertaken by a sub-committee of the Trustees.

Opening of the Karoo Garden, Worcester

SPEECH DELIVERED BY H.E. THE GOVERNOR-GENERAL, MR. G. BRAND VAN ZYL.

LET me assure you I am greatly honoured by having been chosen to open these gardens. As a lifelong lover of gardening, I am always happy to be associated with every movement to preserve, and to attract people to an appreciation of, our wonderful flora. Human life started in a garden. All the greatest poets extolled the garden.

As one gets on in life one is apt to think back. To-day I think of the days when Professor Pearson, Eustace Pillans and I used to enjoy our morning tea together discussing horticulture. It was at one of these meetings that Professor Pearson explained to us his scheme for establishing Horticultural Gardens at Kirstenbosch and requested our help. After several discussions it was thought advisable to start by securing the support of one who had sufficient interest and influence to launch the scheme. The first Lord de Villiers was approached and readily consented to take the initial steps. He arranged with Sir Lionel Phillips to introduce the matter in Parliament, and thus Kirstenbosch was started. I shall always be happy that I drafted the first constitution of the new venture.

The early death of Professor Pearson stunned every lover of horticulture. Fortunately for us, he was succeeded by so eminent an enthusiast as Professor Compton, to whom the establishment and development of the Karoo Garden is mainly due.

The pursuit of gardening, in however humble a manner, has a distinct elevating tendency. Workers who are interested in gardening never lack the companionship of friends similarly interested. They are always ready to fraternise with each other, and to exhibit a spirit of freemasonry in every deed and action. The happiest moments are probably spent in visiting each other's gardens and discussing the merits of their favourite plants, or the results of their experience in growing them.

Gardening certainly is one of the healthiest of pursuits to persons who spend most of their time in indoor occupations. It affords a golden opportunity of breathing in the fresh and invigorating air, either before or after the daily toil incidental to their bread-winning activities, and storing up a fresh supply of energy for future occasions. Gardening affords an opportunity of making lasting and real friendships with co-workers in the same sphere of recreative pursuits.

Indoors there is always a book or a newspaper to read. Few of us can sit in an easy chair doing nothing, but most of us can sit quietly in a garden or stroll around it, and no one I have ever heard of objected to smoking in a garden.

Like most other arts, gardening had its origin in supplying a primitive want and, as want grew into desire, and desire increased and became more luxurious and refined, its objects and its province extended until, from an enclosure of a few square yards containing "a gooseberry bush and a cabbage", it has extended to a park.

It was always clear that with all its national advantages, Kirstenbosch was totally unsuited for the growth of our dry Karoo succulents, perhaps from a scientific point of view the most wonderful and attractive of all our flora. In 1921, therefore, the Karoo Garden was established at Whitehill for the cultivation and study of the succulent plants of South Africa.

The succulent flora of South Africa are of great interest and variety. They are by far the richest of any country in the world. Only the flora of parts of northern, central and southern America approach them, and they are almost confined to the cactus family: in South Africa succulents exist in many of our families of plants—the Mesembryanthemum family is splendidly rich in them—then there are all the Euphorbias; the Crassulas and Cotyledons; the Aloes, Haworthias and Gasterias; the Kleinias, Othonnas and Senecios in the Daisy family; and many others.

These plants are celebrated throughout the world; in fact, they are one of the features which specially distinguish South Africa, and of which we should be specially proud.

The idea of a Karoo Garden was to establish a place where succulents could be grown in more natural conditions than in the National Botanic Gardens at Kirstenbosch, where the relatively high rainfall caused special difficulties in growing these plants of arid climates.

Whitehill was chosen as a typical Western Karoo locality: the land was given by the late J. D. Logan, and the Railway Administration gave considerable assistance. For many years the Whitehill Garden was under the Curatorship of Mr. J. Archer, a well-known ex-railwayman and enthusiast for succulent plants. On his retirement no successor was appointed, on account of financial and residential difficulties. The difficulty of maintaining the Whitehill Garden increased rather than diminished, and when the new route of the National Road was found to be far removed from the Garden it was realised that public visits and interest would practically vanish.

It was then decided that, although it was impracticable to continue at Whitehill, the idea of a Karoo Garden was too valuable to abandon, and the Trustees determined to seek a new site.

After much consideration it was decided that the row of koppies here immediately north of Worcester presented a very favourable position for a Karoo Garden. The soil appeared to be of the right type, the rainfall was said to be from 7 to 10 inches, all of which appeared suitable; there are, as you see, bold and picturesque rock formations as well as expanses of more level ground; and the best indication of all was the existence here of a typically strong Karoo vegetation consisting largely of vygies with aloes, haworthias and other succulents.

Much of the land in question formed part of the Worcester commonage. The Worcester Municipality was quick to recognise the value to the town of the establishment of such a Garden close by, and generously agreed to co-operate in the scheme by giving the necessary land and other facilities. Mr. Charles Heatlie also made an arrangement with the Municipality by which a portion of his land adjoining would be available for the proposed Garden.

The Mayor and town officials took a keen interest in these negotiations with the Trustees of the National Botanic Gardens. It should be mentioned that much

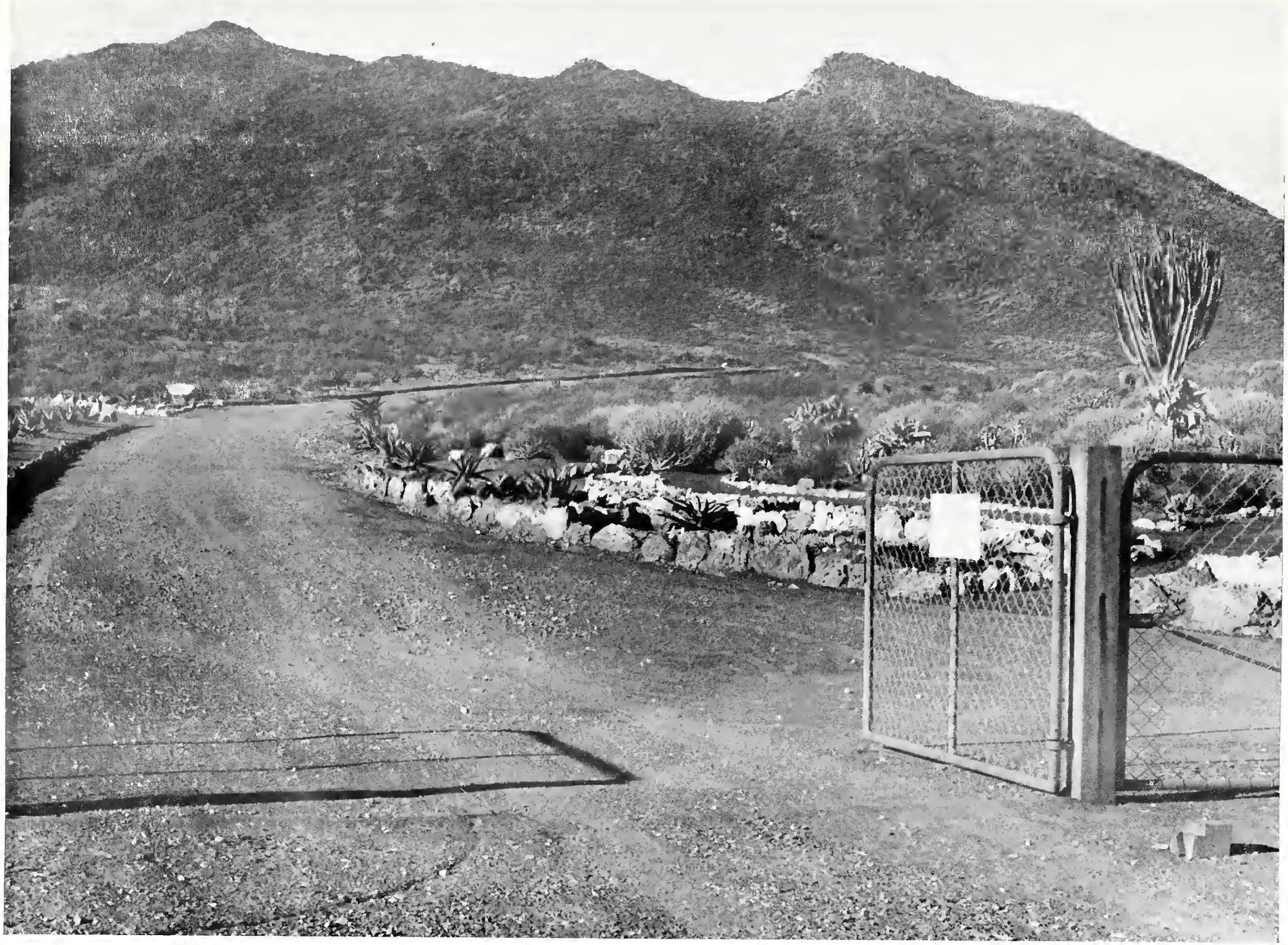

PLATE II. Entrance to the Karoo Garden, Worcester.

of the credit for the successful result was due to the late Dr. Bennie Hewat, who was one of the Trustees and who, by his work in connection with the Technical College, was a well-known and highly respected friend of Worcester.

The decision to move to Worcester was taken in 1945, and an area of over 36 morgen was pegged out on the koppies here, roughly two miles north-east of the centre of Worcester and one mile from the line of the National Road. Mr. J. Thudichum was appointed Curator in August, and work was begun in earnest.

As must be apparent to all, much has been done during the three years of occupation. The whole Garden area has been securely fenced. A water supply has been provided by the Municipality and a small reservoir built. The Municipality has also improved the road leading to the entrance gate. The Government, through the Public Works Department, has provided a house for the Curator and a potting shed. Internal roads and paths have been laid out. A nursery has been terraced and fenced. The shade-house from Whitehill has been brought here, and a new roof provided. All the plants from Whitehill have also been transferred here; Messrs. Hurling and Neil, of Bonnievale, and others have contributed valuable plants; many plants have come from Kirstenbosch, and many others have been specially collected. In addition, a valuable collection of plants was purchased from Mr. M. Malherbe, of Worcester. A great deal of planting out, propagation by seeds and cuttings, ground preparation, bush clearing, etc., have been done. Considering the difficulties in obtaining sufficient and suitable labour, Mr. Thudichum is to be congratulated on the progress which has been made in three years.

The work has not been accomplished without considerable expense in salaries, wages and materials. The Trustees have been willing to provide much of this out of their general funds, and some has come from special subscriptions made by members of the Botanical Society for the support of the Karoo Garden.

But it must be pointed out that in the last three years the Trustees have spent over £3,500 on the Garden, of which £1,000 has been non-recurrent initial expenses. When it is appreciated that their accounts show a considerable deficit last year and the prospect of an increased one this year, it will be realised that they must look for additional funds if they are to carry on with the work in the Karoo Garden which has made so promising a start.

It was only at the beginning of this century that greater public spirit and higher patriotism were awakened to the preservation of places and objects of natural beauty and historic interest in this country, and with them came the awakening of the spirit of protection of our fauna and flora.

We began to appreciate what the brighter side of Adderley Street, with the hundreds of bunches of beautiful wild flowers admired and purchased by all and the loads of flowers and plants sent to other parts, cost the country; that the supply was not inexhaustible; that the area supplying these beautiful objects was a limited one, and that the species might in a few years become extinct.

I remember when crassula (*Rochea coccinea*), the Pride of Table Mountain as it was called, and the red and blue Disas (*D. uniflora* and *graminifolia*) could be seen in unlimited quantities on Table Mountain; when brown Afrikanders (*Gladiolus grandis*) could be found in untold numbers at Clifton and Camps Bay; when Nerinas were plentiful about Hout Bay; and when Proteas, our popular sugar bush, grew in profusion at Sea Point. To-day these are not to be found there.

There is nothing quite like the Cape flora in any other part of the world. Their fame spread, and visitors on arriving here enquired where this or that flower could be found. In many cases we had to admit we had permitted them to be ruthlessly destroyed and that they now were lost.

Abroad the wonderful and unmatched vegetation of South Africa is more fully realised than it is here. The famous botanist, the late Sir Ferdinand von Müller, writing to Sir Hercules Robinson, the then Governor of the Cape, in 1895, went so far as to say " the vegetation of South Africa is the richest in the world, not only as to the number of species, but also as containing an astounding variety of plants of special and peculiar type. . . . Hundreds of these are quite local and restricted to very circumscribed areas. . . . Special and peculiar plants are sure to be swept out of existence altogether unless special provision is made for their preservation. . . . In future centuries, hundreds of these beautiful and remarkable plants will be unknown save by the dried specimens preserved in State Herbaria."

Dr. Bolus referred to the " gloomy impression that the South-Western flora is dying out and is doomed to extinction "; others, among them Dr. MacOwan, made reference to the same danger.

There is clear evidence of the existence of species a century ago which have not been seen since.

Protective societies were founded and legislation passed. Though a check was placed on the indiscriminate destruction, many still defy the law, but, except at our wild-flower shows, the tempo has slowed down. The conscience of the public has awakened, and as people have accepted laws in regard to cruelty to animals, so they will in time accept and abide by laws for the protection of our flora.

The Botanical Society of South Africa and the Wild Flowers Protection Section (which is a branch of the Botanical Society) have already done wonders in preserving our flora. You see here to-day some of the results of their efforts, which deserve the support of the whole Union, and which no doubt will get it when Kirstenbosch and Worcester are accepted as national assets, just as the Kruger Park is.

One method of protection has often been advocated and should be followed. It is that the Government should set aside certain areas throughout the country where the products and aspects of nature should be preserved for all time, and in which animals and plants alike should be preserved from the ravages of mankind and from all other disturbing and destructive influences.

If done gradually, it will require little expense at first. There are thousands of acres of Government land along the mountain ranges of little or no agricultural value. If these are preserved, not only will our flora and fauna be assisted, but much of the soil erosion now taking place will be stopped.

Nowhere is such preservation more urgently needed than in South Africa, and it would be difficult to point to another part of the earth's surface occupied by European races where it has been more neglected.

We are the custodians of this vegetation, than which there is none more remarkable or of greater scientific interest.

We who have in our charge so unique a collection of forms as those which make up the vegetation of South Africa could not continue for ever blind to their extermination as a result of wanton destruction or careless neglect.

Ek is seker daarvan dat dit nie vir my nodig sal wees om Worcester daaraan te herinner dat hy 'n florerende en snel ontwikkelende dorp is nie. Dit is nie Worcester se verlange om uitsluitlik 'n handeldrywende dorp te wees nie. Hy is ver te vooruitstrewend om net met sy handelsvooruitgang tevrede te wees. In hierdie tuin besit hy alles wat nodig is om rus en afleiding te verskaf in die kleurlose roetine van produksie.

Die Karotuin gaan een van die dorp se aantreklikhede wees; dit gaan nie alleen vir inwoners van Worcester 'n belange wees nie maar dit gaan ook 'n plek wees wat besoekers gaan aanlok. Dit sal diegene wat hier deurreis beweeg om stil te hou en 'n tydjie daarin te vertoef; dit sal Worcester op die landkaart van die plant- en tuinboukundige wêreld plaas as die ligging van 'n instelling van uitstaande en besondere belang.

Die tuin is meerendeels 'n belangrike toevoeging tot die onderwystoerusting van Worcester en die omliggende distrikte. Besoeke van skole en die moontlike aanstelling van spesiale onderwysers in natuurstudie, soos op Kirstenbosch, is rigtings waarin die aangeleenthede wat deur die tuin aangebied word benuttig kan word.

Die Worcesterse Munisipaliteit het ten volle besef wat 'n aanwins die tuin sou wees en het hulself beywer om dit hier tot stand te bring.

Dan weer is daar deur die tuin 'n besondere eis op die afsonderlike inwoners van Worcester, en op Worcesterse handels- en vervaardigingsondernemings, gestel. Wat 'n uitmuntende geleentheid het hulle nie nou om die beste tuin van sy soort in die hele wêreld te besit nie. Dit berus dus by hulle om die onderneming te ondersteun deur hul bydraes aan die Botaniese Vereniging of deur skenkings of bemakings, en om hul vriende daartoe oor te haal om dieselfde te doen.

Deur so te handel sal hulle die trustees tot 'n groot mate bevry van die las van onderhoud en ontwikkeling van die tuin. Die trustees is gewillig om die ervare bestuur en die plantkundige kennis te verskaf, en hulle vertrou dat hulle die algehele belangstelling en geldelike ondersteuning van diegene wat die meeste baat sal trek uit die daarstelling van so 'n waardevolle bate, feitlik in die middel van die dorp, sal ontvang.

Ek wens u geluk op die voltrekking van 'n lang na gestrewe idiaal.

En nou gee dit my veel genöë om hierdie tuin geopen te verklaar.

I now have great pleasure in declaring these Gardens open.

SPEECH MADE BY THE CHAIRMAN, BOARD OF TRUSTEES OF THE NATIONAL BOTANIC GARDENS, MR. W. DUNCAN BAXTER.

After paying tribute to the Worcester Municipality and to the importance of the Karoo Garden, Mr. Baxter went on:

" But we must regard the Karoo Garden in its proper perspective, and I hope I may be pardoned for giving a reminder of the origin and purpose and history of the National Botanic Gardens. The Garden at Worcester is not intended to be a creation by itself but a part of the greater scheme, a complement of Kirstenbosch.

" Kirstenbosch will always be associated with two names, i.e., Pearson, who founded it, and Compton, who developed it. Pearson came to South Africa in the first decade of this century as Professor of Botany in what was then the South African College, and he had not been long in this country before he was impressed with two things.

" The first was the extreme wealth, beauty, variety and interest of the Cape flora, which eminent botanists, including Sir Frederick von Müller, Sir J. D. Hooker and others, had described in terms of the highest praise as having exceptional interest and value. Any old inhabitant of Cape Town will remember that fifty years ago one had not to go many miles from the city to see a wealth of beautiful wild flowers, and each of the neighbouring districts had its own distinctive varieties. With the development of agriculture, it is not the same to-day; one has to go much farther afield to see what was a common sight half a century ago.

" The second thing which impressed Pearson was how little was being done to preserve and propagate the flora and how little interest was taken in it. Pearson started to educate South Africa on the need for a National Botanic Garden to preserve the flora, to congregate it where it could be seen, and to propagate and distribute it. He was a singularly attractive person, and he simply radiated enthusiasm. As a result of his efforts, Parliament agreed to the establishment of Kirstenbosch and, until his death at the end of 1916, Pearson was the life and soul of the garden.

" I think we can claim that since 1913 we have (1) established a beautiful garden in wonderful surroundings and one which is recognised as one of the important botanic gardens of the world; (2) with the co-operation of the public, assembled, propagated, displayed, preserved, studied and distributed a great collection of South African plants and flowers; (3) preserved many plants in danger of extinction; (4) created and fostered a tremendous interest in and affection for African flora; (5) through the medium of the Provincial Education authorities, helped to educate young South Africans to appreciate the flora; (6) established a Herbarium and a Journal of South African Botany, and thereby added greatly to the knowledge of our flora.

" Thus has the founding of Kirstenbosch been amply justified. But it was not only a garden at Kirstenbosch that Pearson had in mind. He recognised that Kirstenbosch or any other single garden could not be suitable for all South African plants. Karoo plants, for example, flourish best in Karoo conditions. Hence the establishment of the Karoo Garden, first at Whitehill some twenty-five years ago, and now on the much more suitable site at Worcester. In all, Pearson advocated subsidiary gardens in nine parts of the Union. So far, only two of these are in being, though I am aware that at least in Pretoria and Johannesburg there are gardens, not under the Trustees, which cultivate the African flora. Let us hope that some day Pearson's dream of many gardens will come true."

General Hints on Raising Indigenous Plants from Seed

By H. F. WERNER.

THE information given here deals with species of plants as listed on the Seed List issued by the National Botanic Gardens, Kirstenbosch. Likewise the methods and times of sowing are as employed at Kirstenbosch, but may have to be adapted, where necessary, to suit any special conditions elsewhere in the Union, or farther afield.

While, climatically, the Union of South Africa may, roughly speaking, be divided into two rainfall regions—winter-rainfall (from end of March or early April to October) and summer-rainfall (from September or October to March or April)—the amounts vary considerably from one district to another. Kirstenbosch, for example, while belonging to the former region, receives in addition quite appreciable rains during the summer months, nevertheless artificial watering has to be done for the summer-rainfall subjects to grow them to perfection. Conversely, in other parts of South Africa watering is necessary during their dry winters to approximate conditions of coolness, plus moisture, required during the growing season for winter-rainfall subjects.

Frost is a further factor with marked variations, so that while Kirstenbosch is frost-free, in spite of low readings some winters, some other areas in South Africa experience sharp, or even severe, frosts, and will only be suitable for hardy species. In this respect it should be noted, however, that many species actually only require protection in the seedling stage, which will mean shelter against frost, shading against excessive heat, and provision, of course, against drought, until the plants are strong enough.

Preparation of Soil and Seed Sowing.

There is a tendency to treat indigenous plants with less regard for their welfare than other garden plants. That proper treatment and care will repay the cultivator is demonstrated at the National Botanic Gardens, Kirstenbosch. The digging and preparation of the soil is of paramount importance and, when the plot or bed has been thoroughly dug, a dressing of compost, together with a dusting of ready mixed fertilizer, or superphosphate, say about 2 ozs. per square yard, should be applied and forked in. This is done a week or two before planting or sowing is done. Just prior to actual planting or sowing, a light dusting of agricultural lime is given, the surface of the bed consolidated by treading, and then raked level.

Seed sowing and transplanting should only be done in moist soil. If the soil should be very dry it could be given a watering a day or two beforehand. Seed beds should be of light soil. Likewise for sowing seeds in "flats" (fairly shallow boxes or tins) it should be of a light nature, enriched with a little compost or leaf-mould. When preparing flats, see that some rough material is placed at the bottom for drainage, over the holes, and ensure that the soil is pressed evenly down towards the sides and that the surface is pressed level (a piece of board is useful). Sow seeds thinly. Do not sow seeds deeply: the average kinds of seeds should not be covered more than two or three times their own diameters. Fine seeds should just be covered, and preferably be sown in flats, while very fine seeds could merely be left on the surface of the soil in a pot (Streptocarpus, Erica, etc.).

Monocotyledons.

The majority of the species listed in the National Botanic Gardens' Seed List are winter-rainfall subjects; as their growing period coincides with the cool months of the year, and dormancy is entered into during the summer (except where the species is evergreen), seeds of winter-rainfall subjects are, therefore, best sown March-April. They can either be sown in flats and the seedlings left to make bulblets or cormlets for the first year or so before planting out, or the seeds may be sown in shallow drills made across nursery beds at 6-9 inch intervals, and the bulblets or cormlets left for a year or two before lifting and replanting (February or March). Whether sown in flats or beds, they should in either case be sown thinly to allow for development when left the second season in their seed quarters. A few species may give flower in their second season, but these should be removed to conserve strength; likewise to aid them in reaching flowering size as quickly as possible, always take advantage of keeping the seedlings supplied with water so long as growth is taking place, only withholding water when the seedlings have died down completely. Bulbinella spp. should, in any case, not be dried off.

Summer-rainfall subjects, chiefly in respect of Agapanthus, Dierama, Eucomis, Gloriosa, Kniphofia, Littonia, *Ornithogalum Saundersiae,* Strelitzia, and Zantedeschia, are best sown September-December in flats as described above, except that Agapanthus, Dierama, Kniphofia and Strelitzia should be pricked out into other flats and then set out into nursery beds, and kept growing by virtue of being evergreens. Likewise, deciduous Agapanthus and Watsonias generally should also not be dried off. All the species listed in the National Botanic Gardens' Seed List are sun lovers, but *Littonia modesta* is partial shade loving. Gloriosas seem to do well in sun as well as partial shade.

ANNUALS.

These can be divided into Spring Annuals (sown in March-April) which comprise the majority listed in the National Botanic Gardens' Seed List; and Summer Annuals (sown August-September) which, chiefly, are: *Arctotis grandis, Ceratotheca triloba, Gynandropsis pentaphylla, Lobelia erinus, Monopsis campanulata, Sesamum capense.* The following are used for both Spring and Summer: *Dimorphotheca sinuata, Matricaria globifera, M. multiflora, Osteospermum amplectens, O. hyoseroides, Senecio elegans, Venidium fastuosum.*

All the annuals can be sown (thinly) either in nursery beds, and then transplanted into permanent positions, or sown in flats and then pricked out about 1½-2 inches apart into other flats before planting out into final positions. Alternatively, they could be sown "in situ" and thinned out, but this is a more haphazard method, entailing somewhat laborious hand-weeding and thinning out whilst seedlings are small. All the annuals are transplantable; transplanting should be done before the plants become drawn. They are all sun lovers.

PERENNIALS.

These include some semi-herbaceous (shrubby) perennials. Seeds are best sown September-December, in flats, and then pricked out, about 2 inches apart, into flats or into single containers (2-lb. jam tins with holes in the bottom for drainage) before finally planting out. The latter method, while not essential for all species, will be found useful in the case of: Chrysocoma, Eriosema, Gymnostephium, Hebenstreitia, Hoslundia, Lebeckia, Nidorella, Orphium, Pelargonium, Plectranthus, Roella, Salvia, *Sutera grandiflora,* and Sutherlandia. All these perennials are sun lovers, but Streptocarpus requires a shady, moist situation, and is very suitable for the glasshouse; its seeds are very fine, and they require to be sown on the surface of the soil in a pot (see notes on Ericas). *Dissotis incana* and *Dobrowskya tenella* prefer a sunny, moist situation, while *Lebeckia Simsiana* is best in a sunny, well-drained spot.

SHRUBS, TREES AND CLIMBERS.

The raising of shrubs and trees in private gardens is much neglected, yet it is fairly simple where patience and proper care are exercised. In general, seeds of the species listed in the National Botanic Gardens' Seed List (except Barosma spp.—sown in Autumn) are best sown about September-December, in flats. In the case of members of the Proteaceae (Aulax, Leucadendron, Leucospermum, Mimetes, Paranomus, Protea, Serruria) likewise Erica spp., these are dealt with separately below.

Some shrubs and trees have very hard-coated seeds, and these should have boiling water poured over them and be allowed to stand for twelve hours before sowing. Chipping and filing the seeds are other methods of encouraging germination. After sowing, the flats should be stood in a warm, sheltered spot. The rate of germination varies considerably: it is important in this respect to prevent rapid drying out of the soil and to endeavour to maintain an even degree of moisture. Fine seeds are especially susceptible to fluctuations in this respect.

When seedlings are fit to handle they are pricked out, either into flats as an intermediate move, or singly into tins (2-lb. jam tins are useful). The seedlings should be carefully handled so as not to injure their side roots, but no harm will be done if the point of the tap-root is severed; in fact, this is beneficial. After transplanting, the young plants are best kept in shade until they become re-established. During the hottest period of the year it is useful to shade them with a frame of strips of wood raised above them—removed again towards end of summer.

It may be preferred to grow the young plants on for another season before planting out, in which case they may be given a shift to larger tins, say 7-lb. jam tins. The young plants should never be allowed to root through their containers, and any roots emerging through the drainage holes should be removed periodically.

Ericas should be sown March-April and August-September. Sow preferably in pots. Use a few pieces of broken brick, then a little moss or other material to keep drainage clear. Use light soil, firm surface level, and give a watering with a fine rose and allow to drain; then sow the seeds, either leaving them uncovered or giving a mere sprinkling of sandy soil. Place pots in a warm, sheltered spot; keep them shaded and moist by placing a pane of glass, plus a sheet of newspaper on top, over the pots. When the seeds germinate the paper is removed and air admitted by tilting the glass, until the glass may be removed altogether. Never allow the pots to get dry; water by immersing them up to their rims and allowing the water to percolate upwards; keep the seedlings shaded; they are pricked out, about 1½ inches apart, as soon as fit to handle, into flats of nicely firmed light soil with leaf mould or compost added.

When the seedlings are 1-2 inches high, and with as little disturbance as possible of the roots (by cutting the soil into squares), carefully lift and plant each seedling, with the soil attached, into small pots or 2-lb. jam tins. When they have recovered from the shift and are growing well, gradually harden them off to become accustomed to full sun. They are finally planted out in their second season—about April, which in the winter-rainfall region will coincide with the start of the rainy season, but elsewhere would entail watering to maintain a good degree of moisture and so prevent any setbacks to the plants.

Leucadendrons, Leucospermums, Proteas, Serrurias and *Other Proteaceae* should be sown March-April, preferably in nursery beds of light soil with leaf mould and compost added. The beds must be in the open and not shaded in any way. Drills are made 1 inch deep (easily done by pressing a strip of wood of the requisite width into the bed) at 6-9 inch intervals across the bed. The seeds are spaced an inch or so apart in the drills, covered with sandy soil, and given a good watering to settle the soil, and thereafter kept moist. The seeds could also be sown in flats, but drying out must be watched, as fluctuations of this kind will cause delayed germination—so much so that Leucospermums may remain dormant. Germination varies according to species, but may be anything from three weeks and upwards, before the cotyledons show above ground.

As soon as the seedlings have formed the first true leaves, they must be lifted, the growing tip of the tap-root severed and the seedlings then tinned separately (2-lb. jam tins are useful, except for *Leucadendron argenteum* ("Silver Tree"), which is a robust grower, and requires a larger tin). The soil for tinning is any average light garden soil, enriched with some compost or leaf mould, also a little bone-meal if available. In tinning, the cotyledons of the young plants should be kept just above the level of the soil, that is, the young plants are tinned a fraction deeper than what they were in the seed bed. They are, of course, given a watering to settle them in, but subsequent waterings must be carefully regulated, as damping off of the young plants easily occurs under excessively wet conditions. Growth is usually rather slow at first, but with the advent of warmer weather progress becomes more marked. When growing well, examine the plants from time to time, removing any roots coming through the bottom of the tins, to prevent rooting through. The plants should also be given a pinching at this stage (except "Silver Tree") to encourage bushy growth.

The young plants are planted out as one-year-olds. In planting out do not disturb the plants too much; to this end see that the plants in the tins are not dry, which will facilitate removal of the ball of soil and roots intact. Plant firmly and give the plants a good watering.

If the tin method of raising strong one-year-old plants for planting out is not possible, then seeds could either be sown "in situ" in prepared places in the garden in groups of three seeds and the surplus transplanted. Alternatively, the seedlings from the seed bed could be planted direct into their permanent positions, but in this, as well as the previous method, there would be less control over the seedlings.

SUCCULENTS.

Seeds can be sown September-March, and for this purpose 2½-4 inch size pots are best for fine seeds. The soil should be of a light, sandy nature. In preparing pots and sowing seeds, as well as shading with panes of glass and newspaper, see notes on Ericas. It should be noted that seeds of a number of species are distributed, for convenience, in their capsules, in which case the seeds must, of course, be removed from the capsules before sowing. The fine seeds should receive only a slight sprinkling of very sandy soil after sowing and not watered overhead, using the percolation method instead. The seed-pots should be kept moist but not wet, and the drainage should, therefore, be good. It will be found useful in maintaining the degree of moisture to plunge the pots up to their rims in sandy soil.

Warmth for the seedlings is essential, but direct sun in the hottest months of the year should be avoided: a frame of strips of wood raised above the seedlings (or twiggy branches placed over them) is useful. The seedlings are pricked out, about 1½ inches apart, into flats or pots of light soil and grown on carefully, without a check, by supplying a little water from time to time—just sufficient to keep the plants plump and prevent any shrivelling. When the seedlings have reached full size they will better be able to withstand dry conditions.

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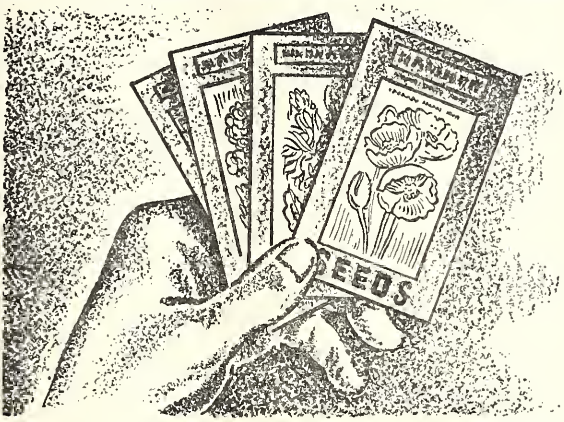

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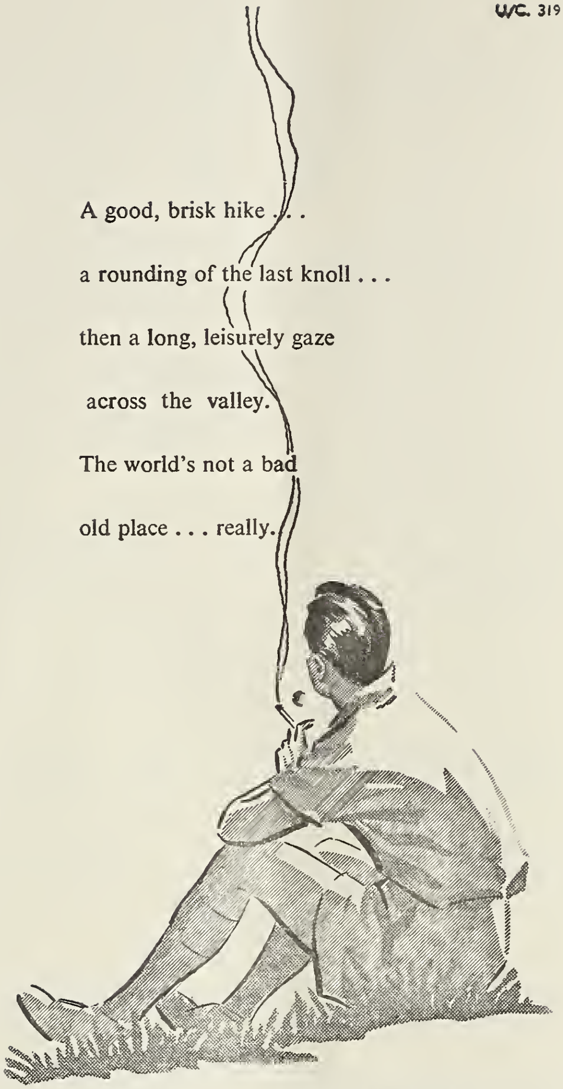

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THE FOLLOWING IS THE SOCIETY'S PROGRAMME FOR 1949,
as printed on the Membership card:—

Tuesday, February 15th, at 8 p.m.
Public Meeting, Election of Worcester Committee, Films. Hugo Naude Art Centre, Worcester, C.P.

Tuesday, March 22nd, at 8.15 p.m.
Annual General Meeting, Exhibition of Colour Pictures, Kirstenbosch Flowers, by Professor R. H. Compton. Lecture Hall, Kirstenbosch.

Saturday, June 18th, at 3.30 p.m.
Gardening Talk by the Curator of Kirstenbosch, Mr. H. F. Werner. Lecture Hall, Kirstenbosch.

Monday, September 5th, at 8.15 p.m.
"Floral Heritage" Cine Films by Mr. W. F. Howes-Howell. Lecture Hall, Kirstenbosch.

Saturday, September 24th, at 11 a.m.
Anniversary Meeting, Karoo Garden, Worcester, C.P.

Saturday, October 8th, at 10.45 a.m.
Annual Gathering of Members at Kirstenbosch, on the New Lawn (if wet, in the Lecture Hall).

MEMBERS! Support the work of the Society by attending these fixtures, and don't forget to pay your subscriptions!

The Cultivation of Succulents in South Africa

By H. HALL.

AS I commence these notes my memory recalls various remarks made to me in the past by people who considered me fortunate in being able to work with plants all day instead of, as in their own case, evenings and week-ends. Well, it is commonplace to regard one's own job as less attractive than someone else's. Sometimes I would protest that the Spring sunshine and fresh air had tempted them into the open spaces, and that Parks and Gardens were not in their thoughts during the long, cold winter months as they worked in their nice, warm offices; not so envious of the gardener now, as he carries out his routine tasks for the following seasons. From my point of view, the truly envious were those whose hobby was the cultivation of succulent plants, and it is for the benefit of readers who are interested in this branch of horticulture that these notes are prepared.

The Union of South Africa is unique in that its wonderful flora includes the greatest variety of succulent plants in the world. Only on the American continent is to be found a rival with its vast group of Cactus plants, with their curious form and beautiful flowers. The term "Cactus" appears to be pretty well established here in South Africa, and as often misapplied to our succulents as it is overseas. Only the other day I was asked by a lady and gentleman in Kirstenbosch to direct them to the "Cactus Garden". In brief, cacti are foreign plants so far as Kirstenbosch is concerned, thus we do not grow them here. I would add, however, that they are all succulents in the technical sense, and for the benefit of those who have the urge to cultivate both groups, these notes could be applied, in a broad sense, to them all.

In many parts of South Africa the climate is ideally suited to their cultivation outdoors. A dry atmosphere, long spells of dry weather, abundant sunshine and comparatively little snow and frost eminently suit their requirements. Some readers, especially overseas, will reflect that as they are our wild plants anyway, the previous sentence is superfluous. Perhaps it is, but it must be understood that there are vast areas with these conditions and with a noticeable absence of succulent flora. Why they are not there is a problem outside the scope of this article. The first problems for the beginner are: the choice of position in the garden, the aspect or slope in relation to the sun, the soil, and the drainage. Fortunate indeed are those whose garden includes a portion of a hillside, since, with little modification, they can quickly turn it into a very natural-looking succulent garden.

It must also be borne in mind that the amount of rainfall and the time of greatest precipitation vary a great deal and have a marked bearing upon the species found in the various regions, their period of growth and dormancy, time of flowering, etc. It is only by getting to know the natural conditions of the various species that one can be surer of success. They will not all tolerate the same treatment, and failures can be generally traced to such happenings. Where, as at Kirstenbosch, a fairly generous yearly rainfall is experienced, coming as it does in the winter months, the slope and aspect are of the greatest importance. In such situations, the aspect should be to the north if possible, and a well-defined slope is most useful, so as to obtain the maximum sun and warmth in winter, and to allow maximum drainage. The presence of trees, ornamental though they may be in the whole setting, is not desired where succulents are to be grown with success. The drip from them in winter, and the excessive shade from their canopy, must be avoided at all costs. If such have to remain, one is limited to certain species which tolerate such conditions, which will, in the long run, leave one rather dissatisfied. In areas of decreased rainfall the steepness of the slope is of lesser importance. The soil should be a light, sandy or gravelly mixture if possible, not too rich in organic matter, since the latter induces rapid growth, which is not desired. Most succulents prefer a soil calcareous rather than a lime-free one, and because lime is quickly washed out of the ground this must be replaced periodically. Even in areas with a comparatively high rainfall, given the adequate slope, a well-drained soil, avoidance of deep pockets of rich soil that would hold too much moisture in wet weather, a vast number of interesting species can be grown to anyone's satisfaction; the succulent garden in Kirstenbosch being ample proof, if such were needed, that this is so.

Travelling through the Union, one sees countless examples of succulents in their natural element, clothing rocky slopes, some in shadowy kloofs where direct sun falls but for a short time, yet in pockets where the soil is of the scantiest and never water-logged; some species inhabiting the hottest (northern) slope in full sun, and on the cooler side of the hill totally different kinds. On level plains are others of great rarity and interest, yet readily passed by because they so closely resemble the stones in which they live, and which protect them far more than is generally realised, such places being among the driest of all. Some are only found on the very summits of mountains, e.g., *Crassula Comptonii, Conophytum minusculum, Anacampseros Comptonii,* all Lilliputian types, protected by their insignificance and extreme isolation.

With the judicious use of weathered stone (sandstone is ideal), even a level garden can be quickly transformed into a miniature koppie, and if one carries in his mind a vision of the numberless examples of natural rock formations which are to be met with almost everywhere in South Africa's abundant hills, a pleasing and natural layout can be assured. Nothing is more hideous than rows of even-sized stones in symmetrical lines in a rock-garden. Besides aiming at a natural appearance, allowance must be made for adequate root-space, and very steep slopes must be broken up by rocks so as to prevent soil erosion in heavy rain. The soil must be made moderately firm, and for some species it can hardly be too firm. This has two advantages: firstly it promotes slow and sturdy growth which is the one to be aimed for, and secondly it allows surplus water to drain away more rapidly. A loose soil holds water like a sponge, and in hot weather becomes " puffy " and heats up to a considerable depth and is most injurious to surface-rooting species like Haworthias, Gasterias and lots of others. The use of a surface layer of rock fragments scattered to appear quite natural helps in cooling the soil in summer, and is of considerable benefit to the dwarf species such as Argyroderma, Lithops, Cheiridopsis and many others which grow in such conditions in the wild. I am not alone in the belief that some plants actually sicken when they are separated from the stones that once held them secure.

In cultivation, the planting is perhaps the most important factor in the life of the average succulent. Careless handling, overwatering, the wrong time of the year, and valuable plants and time are lost. It is best carried out during the warmer, drier months, avoiding cold and wet periods. It must always be remembered that a succulent has a store of moisture far in excess of the average garden plant, and this degree of fleshiness is quite a good guide to follow when considering its requirements after planting out. The more fleshy they are, the less water do they need. Observation quickly reveals which want water and which do not. When handling large subjects such as Euphorbias of the tree types, e.g., *E. ingens, E. triangularis,* etc., the thick and thorny bush or dwarf types, weighty enough to suffer root damage, care must be taken to prune all broken roots, followed by a few hours in the dry air to aid in healing the cut surfaces before planting out. For these also the soil in their new situations must be fairly dry, and it is inadvisable to water such species in for several weeks. Fortunately, many of these, and the larger Aloes, can be grown from cuttings, and these may be planted without roots provided that the cut surface has been pared smooth and is allowed to lie in dry air until well healed (a few days or weeks, according to type), and that their bases are resting on a layer of clean sand. On no account should water be given to them until new roots are known to have been made. In all cases firm planting is essential. It aids rooting and gives the very necessary support in case of high winds. Injury to the base of plant or cutting during planting must be avoided at all costs. Since cuttings of the heavy types must not be planted too deep, it is wise to place suitable rocks around the base to assist in holding them in position, this method being far more satisfactory than unsightly stakes.

The arrangement of the plants must be left to those who have, in their mind's eye, the finished picture, but it must be emphasised that a knowledge of the adult size of one's plants is important. *Euphorbia ingens,* for instance, is a handsome plant as a seedling, but it rapidly grows to a tree of twenty feet or more. Therefore, such giants must be placed where they most suitably conform to the general scheme. In a small garden they would have to be discarded after a few years to make room for smaller specimens. Like the enthusiasts who grow succulents in greenhouses in England, starting off with a joint or two of " Prickly Pear ", and this said plant being invariably the first to go to make room for smaller species, passed on to other beginners with the donor's blessing! The planting of the rarer and more succulent Mesembryanthemums such as Argyroderma, Pleiospilos, Gibbaeum and the soft-stemmed Stapelias is best done in the summer, but most of the showy, free-flowering " Vygies " like Drosanthemum, Delosperma, Lampranthus and Aridaria, are best planted in autumn and winter (except in areas where frost occurs). Such things should be grown from cuttings every two or three years, because they are inclined to die out from sheer exhaustion of flower production. Some of them can be cut into pieces in autumn and planted in their new quarters direct, but where conditions permit it is best to root them in special beds prior to planting out. Most of them make excellent plants in a few weeks. During the cool wetter months, especially in the western Cape, they make most of their annual growth, followed by their brilliant display in spring. Many of these can be used to great effect by growing over the rocks, a situation they delight in. For dry banks they are ideal. But it should be remembered that they prefer a richer soil than the more succulent types and respond to some additional water in the summer months.

Full exposure to the sun does not suit all succulents: most of the Haworthias and Gasterias prefer some shade during the hottest hours of the day, the same being true of many Stapelias and some Aloes, and while it is impracticable to plant them in the heart of some twiggy shrub as occurs in nature (and sucn would not be seen or admired by one's friends if they were), they should be given the cooler side of the rocks whenever possible. Our comparatively generous winter rains at Kirstenbosch make some of these rather " difficult ", because the conditions advocated for summer might be too cool and wet in winter in regions of rather high rainfall. Most Stapelias prefer dryness for the greater part of the year, but are capable of rapid growth at the right time. Unless one has a rather dry climate, they are better not permanently planted outdoors. This group, with their star-shaped, evil-smelling flowers, are worthy of a real effort, even if such things as Hoodias, Trichocaulons and some Namaqualand Carallumas do appear to hate all gardeners! A number of the choice Haworthias are always found growing deep down in stony ground, with the barest portion of the leaf tips visible, and these, together with the dwarf, " mimicry " types of Crassula and Mesembryanthemum, should be given full sun, provided they are liberally surrounded with small broken rock and gravel. It must be emphasised that the best way to keep the dwarf and rare species going year after year is to avoid getting them overfilled with water, a condition which will less readily withstand cold, wet winter days. In any case, much of their peculiar attraction is lost when their natural form and colouring have changed due to high-speed growth.

Although one does not expect magnificent floral displays in a succulent garden, there are plants which provide considerable colour at various times of the year. The Aloes alone provide a wonderful show of scarlet and orange, mostly in the winter months, and that is partly why they are indispensable on the rock garden. Clumps of *Rochea coccinea* supply a vivid scarlet scene in the summer months, as do *Crassula falcata* and *C. perfoliata.* For sheer brilliance, of course, the shrubby Mesembryanthemums, such as species of Lampranthus, Delosperma, Ruschia and Aridaria, are without parallel. Most of these are at their best in the spring, and they should always be planted so that their floral beauty is seen to the best advantage. Some of their colours are almost hurtful to the eyes, so intense are they. Then there are species of Cotyledon with very attractively coloured foliage, besides their showy spikes of waxy, bell-like flowers. Rivals to the latter are, of course, the American relatives such as Dudleya and Echeveria with magnificent leaf-colouring. Even when out of flower, these foliage plants have an appeal of their own, as every succulent enthusiast will know.

It is only fair to point out that no garden in any part of the world can provide an ideal state for all and every succulent, cacti included. They inhabit widely differing climates, temperatures, altitudes and aspects. Many of the rarest cacti are found at an altitude of 20,000 feet and are snow-covered for half their life. Others grow in the forests of the tropics with rainfall more or less constant throughout the year. In South Africa there are species that are met with only in soils that are decidedly " brak ", and which change their appearances considerably when cultivated in soils that are not. Many species from coastal sand-dunes thrive indifferently in inland gardens. The charm of others lies in their leaf colouring, a condition readily lost unless kept very dry. One can liken this to sunburn that waxes and wanes through the seasons.

Most popular of all (of the South African succulents at least) are the Lithops and Conophytums, nor are they such difficult subjects as at one time supposed. About fifty of the former and some two hundred of the latter are known. The Lithops are all good to look upon, revelling in full sun, provided their roots are not exposed to the heat and dryness of the air. So attractive is their leaf-colouring and pattern that some people resent this being hidden by their yellow or pure white flowers on summer afternoons! Much has been written in the past about their wonderful leaf colouring and " mimicry ", and this will not be dwelt upon here, but when they are in flower they mimic nothing unless it be all other plants that produce their flowers to provide for a future generation. The Conophytums are equally fascinating dwarfs of the plant world, are rather more variable in form than the Lithops, and show less variation in leaf colouring. Their flowers are often very showy, being mainly yellow and shades of pink to magenta. Both genera require a strict observance of their resting periods for satisfactory results, and since they flower at the same time, late summer in South Africa, they require similar treatment. For two or three months, commencing with the appearance of the flowers, they require watering, but this must never be excessive. In both cases they make but one leaf pair each year, and this accounts for their slowness of growth, especially from seed. Specimens other than seedlings should be resting for about nine months out of the twelve, though most people like to think they need a little less. In collections overseas these two genera are invariably given the appropriate treatment, but most other succulents are encouraged to grow in their summer. In my view, after the realisation that a great many kinds of succulents make their brief annual growth during the winter rains in nature, I believe many more would do better overseas if encouraged to grow only in their autumn, especially such subjects as Gibbaeum, Pleiospilos, Dinteranthus and Argyroderma, some Crassulas and Euphorbias. And, furthermore, I believe that many should be given a longer resting period than is generally given there. The watering for these subjects is most important; it must never be excessive at any time, otherwise there is the risk of a swollen, unnatural plant, or its sudden and fatal collapse.

The vast majority of succulent plants may be readily grown from seeds. As a matter of fact, their cultivation by this method is very fascinating indeed, and now that strict laws prohibit the gathering of many species in the veld, cultivation of seedlings should be encouraged. Seeds of many desert plants germinate very well indeed, often less than 48 hours after sowing. The soil should be a finely sieved, sandy mixture with some humus to aid in retaining moisture, and for best results should be sterilized. Because many seeds are extremely fine, they should be barely covered, sown on perfectly level surface and lightly pressed in with some smooth object. By covering with paper, there is less likelihood of the soil drying out suddenly, a dangerous state of affairs when germinating seeds of any kind. It is best to water the pots or other containers by steeping them rather than sprinkling them overhead, for the risk of washing the seeds away is too great. The seed pods of some Mesems are a long time in ripening, and remain firm and closed until the first rains of autumn open them and wash out their seeds. They are specially adapted by Nature for this, and thus we have a guide, if needs be, as to when to sow some of them. When grown under glass the watering does not wash them out, for the watering ceases before the pods have really opened fully, yet it is astonishing how swiftly some species reveal their contents when moistened. The subsequent treatment after germination depends upon the type and varies accordingly, but the dwarf species, if not sown too thickly, will stay quite happily until the following season before transplanting. Others will reach flowering stage, if grown on judiciously, in one year.

The dwarf species do not require repotting, i.e., if grown in frames or other structures, as most people do for these rarer specimens, for a number of years. I have known the finest specimens of Lithops in England that were kept in the same pots undisturbed for ten years, and the soil was only burnt clay. That they flowered and produced fertile seeds each year left no doubt that they were in perfect health.

As subjects for miniature gardens, the dwarf species and others in the juvenile stages are ideal. They are a source of great interest to old and young alike, give little trouble, fit well into modern decoration, and once under their spell one rarely shakes it entirely away.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT, 1948

Your Council has pleasure in presenting the Thirty-fifth Annual Report and Financial Statement of this Society for the year ending December 31st, 1948.

Membership.—During the year, 352 New Members have been enrolled, including twelve Life Members. It is with much regret that 222 Members who were two or more years in arrears with their subscriptions have had to be crossed off the Membership Roll. The total number of Members as at 31st December is as follows:—

Life Members	119
Family Members	159
Ordinary Members	1,343
Associate Members	521
Total	2,142

Financial.—The grant to Kirstenbosch for the year 1949 amounts to £1,410 12s. 2d., this sum showing an increase of £140 1s. 8d. over the amount granted for 1948. This increase is in part due to several generous donations as well as to a satisfactory increase in membership. The Life Members' Fund at the end of the year amounted to £1,985, £500 having been withdrawn from this fund towards the cost of the Secretary's new office.

Election of Office Bearers.—The following Office Bearers for 1948 were elected at the Annual General Meeting held on April 27th:—

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, the Right Honourable Mr. Justice E. F. Watermeyer.

Members of Council: Professor R. S. Adamson, Mrs. L. Bolus, Mr. C. H. Clayton, Dr. E. L. Gill, Mr. C. R. Gohl, Mr. F. A. C. Guthrie, Miss M. E. Johns, Mr. G. F. le Sueur, Miss G. J. Lewis, Mrs. G. W. Lyon, Miss K. Murray, Mr. N. S. Pillans, Mr. H. N. Porter, Mr. E. J. Scholtz, Miss E. L. Stephens, Captain C. Struben, Sir Alfred Beit, Mr. W. C. West, Colonel A. A. Beck, Mr. L. A. Solomon.

Four meetings of the Council were held during the year.

The Secretary's New Office, erected in the Gardens, was not ready for occupation during the year, but an encouraging number of new Members were enrolled from the temporary office in the Lecture Hall. It is also very satisfactory to record that many old Members have called and expressed their appreciation of the closer liaison which now exists between the Society and the Gardens.

A number of Members' Meetings were held during the year, and were as follows:—

March 6th, in the Lecture Hall, Kirstenbosch, when members of the Gardens staff gave demonstrations of horticultural interest; approximately 150 Members and their friends attended.

July 15th, in the Hiddingh Hall, Cape Town, Mr. G. W. Reynolds, of Johannesburg, the authority on Aloes, gave a very interesting talk on South African Wild Flowers, illustrated with a large variety of lantern slides photographed by himself on the veld in natural colours. About 100 Members were present.

September 18th. The Special General Meeting and Annual Gathering of Members of the Society, held in the Lecture Hall, Kirstenbosch, was very well attended.

October 30th, in the Lecture Hall, Kirstenbosch, Mr. H. Hall gave a talk with demonstrations on succulent plants. The weather was unkind, and the attendance poor in consequence.

Revision of Subscription Fees.—At the Special General Meeting held on September 18th at Kirstenbosch, the proposals of the Council with regard to the revision of subscription fees were unanimously accepted. All Members have since been notified of the new rates of subscription, which are as follows: Family Members, 50s. per annum; Ordinary Members, 30s. per annum; Associate Members, 10s. per annum.

The special subscription to the Karoo Garden was abolished. No change was made with regard to Life Membership. The subscription to the Wild Flowers Protection Section remained unchanged.

Journal of the Botanical Society, Part XXXIII, edited by Professor Compton, was published during the year, and issued to all Members, Learned Societies, etc.

Seed Distribution.—There were 716 requests for seed, and 11,820 packets were sent out to Members during the year.

Visitors to Kirstenbosch.—The ever-growing interest in the Gardens has again been amply demonstrated by the very large number of visitors, many of whom having expressed their praise for what they saw.

The Karoo Garden.—The most notable event of the year was the Official Opening of the Karoo Garden on September 25th by His Excellency the Governor-General, the Right Honourable G. Brand van Zyl. The Opening was preceded by a Civic Luncheon given by the Mayor and Town Council of Worcester, and attended by a large and distinguished gathering. Speeches at the Luncheon were made by Field-Marshal J. C. Smuts; Mr. W. Duncan Baxter, Chairman of the Board of Trustees of the National Botanic Gardens; Dr. A. J. Stals, Minister of Education, Health and Social Welfare; and Dr. T. E. Dönges, Minister of the Interior and of Posts and Telegraphs. After luncheon, the party proceeded to the Karoo Garden, where, from the steps of the Curator's house, His Excellency delivered an address and declared the Garden open, after which he was conducted on a tour of the Garden by Mr. Duncan Baxter, Professor Compton and Mr. Thudichum, the Curator. It was a brilliant, sunny day, and large numbers of people from Worcester and the surrounding districts were present. Refreshments were kindly provided by Mrs. Thudichum and the Women's Agricultural Association, to whom the Council's thanks are recorded. Subscriptions to the Karoo Garden during 1948 amounted to £235 5s. 9d., being an increase of £62 0s. 9d. over the previous year.

Wild Flowers Protection Section.—The Annual Report of the Committee is annexed.

Obituary.—It is with deep regret that your Council records the death of 31 Members of the Society during the year, including three Life Members. Letters of condolence have been sent to all known relatives.

Thanks.—Sincere appreciation is expressed by the Council to the Provincial Administration for the use of rooms for meetings of the Council during the year. Thanks are also offered to the Daily Press for their kind co-operation in reporting the proceedings of the Society at its meetings and elsewhere.

C. J. Sibbett,
Chairman.
(Mrs.) W. N. Hall,
Hon. Secretary-Treasurer.

Report by the Wild Flowers Protection Section Committee for the Year Ending 31st December, 1948

The Committee met once during the year, this Meeting being held in the Lecture Hall, Kirstenbosch.

Membership.—New Members enrolled to the Section during 1948 totalled 49, bringing the full membership to date to 315.

Financial.—The amount to the credit of the Section at December 31st, 1948, was £538 6s. 11d., compared with £548 1s. 7d. at the end of 1947. This decrease is mainly due to part-time salary paid to Mr. H. D. W. Meyer over the full twelve months of the year, as against eight months during 1947. Subscriptions received during the year amounted to £84 16s., an increase of £6 19s. 5d. over the amount received in 1947.

Illegal Sale of Wild Flowers.—Up to the present, the Police Department has not been able to appoint its own officers to enforce the Wild Flowers Protection Ordinances, and in consequence Mr. Meyer has again been solely responsible to the Committee for this duty. Mr. Meyer continues to be a most valued officer in this respect, and submits a detailed report of his activities each month. The following is a summary of his reports for the year ending December 31st, 1948:—

Number of Cases Summons Applied for	217
Including:	
Selling Protected Species	49
Having No Licences	57
Other Offences	111

Of the above, 169 cases were convicted by the Courts.

In view of the large number of offenders against the Wild Flowers Protection Ordinances, and the cost of Mr. Meyer's services in doing this special Police work, the Committee are endeavouring to obtain a refund of part of the fines imposed.

Wild Flowers Protection and the Public.—In an effort to stop the illicit gathering of wild flowers, an approach has been made to the Minister of Transport with a view to warning people of this destructive and unlawful habit. An assurance of the Department's co-operation in this matter has been received. Notices have also been circulated through the Press.

Wild Flower Shows.—Discussions have taken place with the Provincial Administration and the Department of Forestry with regard to the display of indigenous flora at Country Wild Flower Shows.

The following were elected Members of the Committee: Professor R. H. Compton (Chairman), Mr. C. J. Sibbett, Mrs. L. Bolus, Mr. D. R. de Wet, Mr. C. H. Clayton, Mr. W. C. West, Dr. E. L. Gill, Mr. E. J. Scholtz, Mr. C. R. Gohl, Mr. H. N. Porter, Miss M. E. Johns, Mrs. G. W. Lyon, Miss K. Murray, Senator M. J. van Breda.

Acknowledgments and thanks are due to the Daily Press for the reports on the activities of the Section during the year, which have been of great material benefit to the Committee and its work.

R. H. Compton,
Chairman.
(Mrs.) W. N. Hall,
Hon. Secretary-Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31st December, 1948

	£ s. d.	£ s. d.
To General Expenses		20 5 0
„ Honorarium to Secretary and Treasurer		144 0 0
„ Bank Charges		5 1 5
„ Stationery, Printing, Duplicating, etc.		145 15 9
„ Postages and Receipts		24 2 1
„ Gathering at Kirstenbosch ..		8 0 0
„ Journal Part XXXIII (1947):		
Printing, Dispatching, Postage, etc.	190 10 9	
Less Received from Advertisements	58 0 0	
		132 10 9
„ Typewriter		50 14 0
„ Surplus for year 1948		1,410 12 2
		£1,941 1 2

	£ s. d.	£ s. d.
By Subscriptions:—		
Family Members	362 2 6	
Ordinary Members	1,155 9 2	
Associate Members	142 14 3	
		1,660 5 11
„ Donations		163 9 9
„ Interest on Investments		99 6 4
„ Sale of Journals, etc.		11 11 7
„ Transfer from Bailey-Taylor Show Card Issue		6 7 7
		£1,941 1 2

BALANCE SHEET as at 31st DECEMBER, 1948.

	£	s.	d.	£	s.	d.
Life Members' Fund:						
Balance as at 31.12.47	2,190	0	0			
Received during 1948	295	0	0			
	2,485	0	0			
Less Secretary's Office Building, written-off	500	0	0	1,985	0	0
Subscriptions Paid in Advance				225	0	10
Sundry Creditor for Subscriptions to the Karoo Garden:						
Balance as at 31.12.47	173	5	0			
Received during 1948	235	5	9			
	408	10	9			
Less Paid to National Botanic Gardens	173	5	0	235	5	9
National Botanic Gardens:						
Surplus for year				1,410	12	2
				£3,855	18	9
The Wild Flower Protection Section Fund:						
Balance as at 31.12.47	548	1	7			
Subscriptions received during 1948	84	16	0			
Interest earned during 1948	10	7	8			
	643	5	3			
Less 5% of 1948 Subscriptions credited to General Administration Expenses	4	4	10			
Paid to Mr. H. D. W. Meyer for part-time services	92	10	0			
Stationery, Printing, Postages, Bank Charges, etc.	8	3	6			
	104	18	4	538	6	11
Bailey-Taylor Show Card Issue:						
Balance 31.12.47	6	7	7			
Less Transferred to Income and Expenditure Account	6	7	7	NIL		
				£4,394	5	8

	£	s.	d.	£	s.	d.
Cape of Good Hope Savings Bank:						
Deposit with Interest at 3% p.a. to 31.12.48				690	3	6
Post Office Savings Bank:						
Deposit with Interest at 3% p.a. to 31.3.48				1,031	18	4
United Building Society:						
Fixed Deposit for 12 months with Interest at 3% p.a. to 31.12.48	485	3	2			
Savings Bank Account with Interest at 2% p.a. to 15.11.48	274	3	4	759	6	6
S.A. Permanent Building Society:						
Fixed Deposit for 12 months with Interest at 3% p.a. to 31.12.48	395	4	10			
Fixed Deposit for 12 months with Interest at 3% p.a. to 31.12.48	727	12	6	1,122	17	4
Cash at Standard Bank of S.A., Ltd.				238	7	6
Miscellaneous Assets:						
Mathews "S.A. Plants" Stock in Hand at cost	4	1	0			
Amount due from Wild Flower Protection Section	6	14	10			
Unpaid Cheque	2	9	9	13	5	7
				£3,855	18	9
Wild Flower Protection Section Fund Investments:						
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3% p.a. to 31.12.48	245	12	0			
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3% p.a. to 31.12.48	112	2	3			
Cash at the Standard Bank of S.A., Ltd.	187	7	6			
	545	1	9			
Less Amount due to General Account	6	14	10	538	6	11
				£4,394	5	8

We have to report that we have examined the above Balance Sheet with the Books and Vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence, and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs at the date thereof, according to the best of our information and the explanations given to us and as shown by the books of the Society.

Cape Town,
18th January, 1949.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

New Members of the Botanical Society
1948

(LIFE MEMBERS: Family Members: Ordinary Members: *Associates*)

The cross (†) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccuracy in the following list it is requested that notification should be made to the Hon. Secretary, Botanical Society of S.A., Kirstenbosch, Newlands, C.P.

A.

Abbott, Rev. G.
Adamson, Dr. W. W.
†Agranat, Mrs. G.
Alexander, Miss B. N.
Allin, Mrs. G.
Allin, W. G.
Alt, Mr. & Mrs. V.
Anderson, A. J.
Anderton, Mrs. M.
†Andrews, Miss J.
Anson-Cook, R. E.
†Armstrong, Mr. & Mrs. J.

B.

†Baldwin, Air Marshal Sir J.
Balzam, Mrs. M.
Barlass, Miss C.
BARLOW, MRS. P.
Barraclough, K. L. H.
Barradell, Mrs. J. R.
Baur, Dr. W.
†Bayliss, W. R.
Benker, Mev. M. C.
Bell, Mrs. D. K.
Berry, Dr. G. F.
Beumer, J. M. H.
Beviss-Challinor, A. H.
Biggs, P. R.
Bihn, F.
Billig, C.
Blake, A. E.
Blumenthal, Dr. C. J.
Bolton, C. J. H.
Booth, Mrs. R. G.
Bourke, B. S.
Bowden-Smith, R. P.
Bowditch, Miss L.
Boylen, D. H.
Brahms, M.
Brebner, Mrs. B.
Bridges, Mrs. B. J.
Brierley, Mrs. N.
Brocklebank, Mrs. C.
†*Brooke, Rev. Canon J. G. H.*
Broomfield, Miss G. M.
Brown, Miss L. M.
Brown, W. A.
†Bruce, Mrs. D. B.
Bryson, J. S.
BUCHANAN, I.
Bufe, H. O.
†Bungay, Mrs. L. L.
Burger, Mrs. E.
Butcher, W. D.

C.

Caledon Municipality
Cameron-Swan, Capt. D.
Carnell, Mrs. J. D.
Cartlidge, G. R.
Cartwright, Mrs. L.
Casqueiro, Dr. A.
Chalmers, J. A. G.
Champ, Miss
CHAMPNEYS, H. P.
Christopher, Mrs. V.
Churchman, C.
†Cienski, Count & Countess L.
Clark, R. R.
Clark, S. J.
Clegg, Mrs. V.
Cloete, S.
Collet, Lady V.
Collier, Miss E.
Cornwall, J. P.
Cron, R. B.
Cunningham, G. L.
Cuthbert-Smith, W.
Cuthbert-Smith, Mrs. W.

D.

Dallas-Smith, Mrs. R.
Dalton, Mrs. A.
Danziger, The Hon. M.
Davie, Dr. T. B.
DAVIES, H. P.
DAVIES, MRS. H. P.
Dawson, Mrs. V.
Deane, S. W.
den Ouden, H.
Dersley, Miss M.
DE VILLIERS, MISS W.
de Wet, Mrs. J. M.
de Wet, Dr. P. J. S.
†Dichmont, I. A.
Dickens, Miss V.
Dickinson, J.
Dinham, M.
Dunn, Mrs. H.
du Toit, F.
†du Toit, Dr. J. C.
Dyason, R.
Dyer, C.
Dyer, Mrs. M. E.
Dymond, G. C.

E.

EDWARDS, MISS G.
Egan, Mrs. S. S.
Elliott, Mrs. G. G.
†Emblen, H.
Engel, G. M.
Engler, E. G.

F.

Fagan, Mrs. H. A.
Faulkner, G.
Fawcett, S.
Feetham, Mrs. R.
Ferguson, Miss J.
Field, Mrs. M. L.
Fisher, Dr. J.
Fisher, Dr. M.
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(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch, and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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Edited by R. H. COMPTON
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Part XXXV 1949

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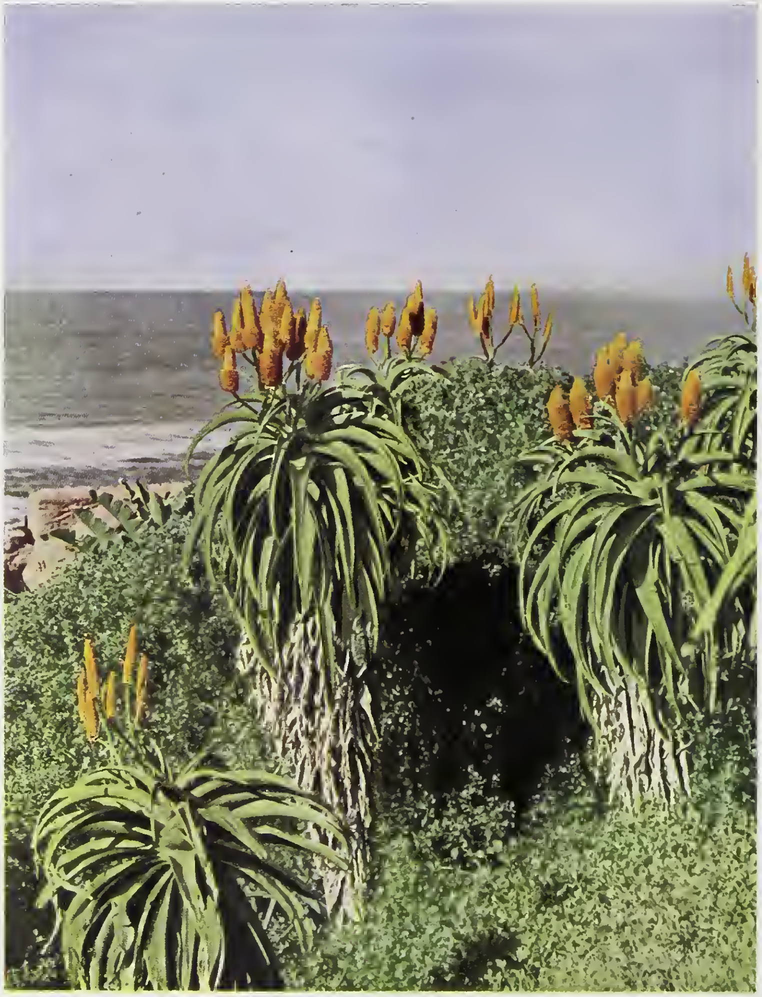

ALOE THRASKII Bak.

At Tiger Rocks, Isipingo Beach, South Coast, Natal.
Height 9 feet. Flowers in June—July.

Colour plate made from one shot tricolour separation negatives by Mr. G. W. Reynolds, Johannesburg.

The Journal of the Botanical Society of South Africa.

Edited by R. H. Compton.

PART XXXV 1949

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Plate II. (*a*) Protea Bush in The Wilds, Johannesburg.
(*b*) A Nature Study Class at The Wilds.

Plate III. J. W. Mathews: Curator of Kirstenbosch, 1913 - 1936.

News and Notes

IT is now five years since the full list of Members of the Botanical Society was printed in this JOURNAL, though lists of new Members have been given each year. This year we again publish a complete list: a few comments will be appropriate.

* * * * *

The increase in membership in the five years is noteworthy. The 1944 list contained about 1,825 names, the present list contains 2,220. Actually the increase is more satisfactory than the figures indicate, because the 1944 list contained the names of various persons who were several years in arrears with their subscriptions; whereas the present list allows for one year's arrears only, after which the Member's name is deleted.

It is earnestly hoped that any Members whose names appear in the current list and who have received the JOURNAL and other privileges of the Society without having paid their dues may do so forthwith. Delay in paying subscriptions, moreover, causes much extra secretarial work which could better be used otherwise.

* * * * *

Not only has the total membership increased, but owing to the higher rates of subscription—which have been accepted loyally by the great majority of members—the amount available for grants to the National Botanic Gardens has increased even more steeply. The Society's grant to the Trustees based on its 1944 surplus was £1,163; the corresponding amount for 1949 was £2,115, nearly twice as much. In addition, the Life Members' Fund has increased considerably, and substantial sums from it have been used for development at Kirstenbosch and Worcester.

* * * * *

Many Members of the Botanical Society of 20 or more years' standing have taken advantage of the opportunity of becoming Life Members for a single payment of £10. Life Membership of the Society now stands at 148.

* * * * *

The preliminary capital expenditure on establishing the Karoo Garden at Worcester, which had been paid out of the Gardens' general funds, amounted to the very moderate sum of about £1,000. The Council of the Botanical Society has now resolved to make a grant of this amount from its Life Members' Fund to the Trustees to reimburse them.

* * * * *

The Botanical Society acknowledges with gratitude the receipt of £700 on account of a bequest from the late Dr. Bernard Price, and the intimation that the late Mrs. A. T. Henshilwood, a Life Member of the Society, had bequeathed £100 to it.

* * * * *

The Society's Membership Cards gave a list of the various fixtures for the current year, and the list is also printed in this JOURNAL. Members are urged to diarise the dates, as no individual notices of the meetings are sent. The various film shows, demonstrations, etc., given by the Society are one of the valuable privileges of membership, and have been very well attended. If Members would like to make suggestions for subjects for future meetings, the Hon. Secretary would be very glad to receive them.

* * * * *

News has been received that the Administration of the Cape Province has decided that with effect from the current year provision will be made on the Estimates for the payment of an annual grant-in-aid of one pound for every pound collected as subscriptions to the Wild Flowers Protection Committee of the Botanical Society, subject to a maximum grant of £150 per annum.

This welcome decision is in recognition of the work done by the Committee, and follows on representations made to the Provincial Administration with regard to the Committee's assistance in enforcing the Ordinances.

With this encouragement we confidently look for increased support from Members, whose special subscriptions to the Wild Flower Protection Committee will in future be worth double what they were before: it should easily be possible to earn the maximum grant next year.

* * * * *

The Report of the Commission of Enquiry into State-aided Institutions (of which the National Botanic Gardens is one) is awaited with much interest by all those connected with these under-financed institutions. One museum had been piling up an enormous overdraft; another had declared itself unable to pay its accounts; Kirstenbosch had run on a deficit for four years; other institutions were also getting "into the red". Some relief has been given by an interim special grant, which, in the case of the Gardens, rectified the accumulated deficits; but the permanent establishment of a satisfactory financial basis for these invaluable national institutions, if such is recommended by the Commission, must depend on a more liberal attitude towards them, and all they stand for, on the part of the Treasury than has been displayed in the past.

* * * * *

The choice of a site at Kirstenbosch for the cottage to be presented to General Smuts by the City Council and citizens of Cape Town shows imagination and a fine sense of fitness. Here, close beside van Riebeeck's Hedge, the only living memorial of the first decade of the colony, on land bequeathed to the people of South Africa by far-sighted Rhodes, in the closest association with the botanical studies which are his special interest and relaxation, and with the most superb view of the Mountain ever before him—the Mountain to whose heights he has so often gone for vision, perspective and inspiration — he will find a home of special appropriateness.

Many possible sites were offered. General Smuts chose the one at Kirstenbosch without hesitation. The Botanical Society and all connected with the Gardens are proud to welcome him to it.

* * * * *

One of the memorials at Kirstenbosch to the first Director of the National Botanic Gardens, Harold Pearson, is the Hostel that was erected in 1926 by public subscription as a residence for women botanical and gardening students working in the Gardens. Circumstances have changed considerably since it was built, and it is now in process of subdivision into four small self-contained flats, which will suit the requirements of the residents much better. The name of the building has been changed to The Harold Pearson Memorial House.

* * * * *

We have very great pleasure in enclosing in this issue of the Journal a prospectus of Mr. G. W. Reynolds' eagerly expected book on The Aloes of South Africa. This work will make botanical history. It is the product of many years of intensive study of the genus—one of the most distinctive and conspicuous in the whole South African flora—and is completely original, thorough and authoritative. The colour illustrations, more than 60 full-page plates, are all made from the author's direct colour photographs of flowering specimens growing in the wild state; this in itself makes the book unique in botanical literature. In addition, there are innumerable black and white photographs, maps, drawings, historical figures, etc. The text is full and accurate in the highest degree, and in addition is unusually readable. The publication of the book will be an event, and Members of the Botanical Society will be well advised to secure subscribers' copies as a possession, a gift, or even an investment.

Mr. Reynolds has kindly supplied the frontispiece for this Journal, showing another of his colour plates.

* * * * *

The Botanical Society is itself sponsoring the publication and distribution of a book, The Wild Flowers of the Cape of Good Hope, arrangements for which have just been completed. This is to consist of 250 full-page colour plates (about 475 separate subjects) drawn from living specimens by Mrs. E. Garrett Rice, and representing some of the flora of the south-western Cape Province, within 100 miles of Cape Town. The book is edited by Professor R. H. Compton, who is responsible for the text and captions; and the project has been organised by a sub-committee of the Botanical Society consisting of Captain C. Struben (Chairman), Mrs. F. Bolus, Miss K. Murray and Professor Compton. Field-Marshal Smuts has written a foreword.

The reproduction of so many colour plates is an extremely costly matter, and it is only by selling a very large proportion of the edition that the costs can be recovered. The price at which the book is offered is exceptionally low considering its content and quality, this having the object of placing it within the reach of as many people as possible. Substantial discounts are offered for advance subscriptions, and Members of the Botanical Society are strongly urged to send in their applications for copies immediately; the success of the venture largely depends on the subscriptions received.

At the same time the Society asks that those who can do so should make special donations towards the cost; some have already done this.

The authors and committee have done the work; it remains for Members of the Society to ensure its success. A prospectus is enclosed with this JOURNAL; please note the closing date for advance subscriptions subject to a discount. The book itself should be published towards the end of 1951.

* * * * *

For those specially interested in the flora of the Cape Peninsula there will soon be two books available. These were mentioned in the last issue of this JOURNAL, but their appearance has been much delayed by printing difficulties. The Flora of the Cape Peninsula, by Professor R. S. Adamson, Mrs. M. R. Levyns, Captain T. M. Salter and others, will probably be ready in July, 1950. It is the first complete regional flora to be published in the Union.

Mrs. Maytham Kidd's book of colour illustrations of Cape Peninsula plants will act as a companion volume to the Flora, and this is also expected to appear during 1950. A notice of this will be found in our advertisement pages.

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The Trustees of the National Botanic Gardens, acting on a suggestion coming from the Society, are dedicating the Rock Garden at Kirstenbosch to the memory of the first Curator, and one of the large rocks in the Garden is to be inscribed " Mathews Rock Garden. J. W. Mathews, First Curator of Kirstenbosch, 1913—1936." The unveiling is to be performed by the President, Mr. W. Duncan Baxter, who is also Chairman of the Board of Trustees of the National Botanic Gardens, at the Annual Gathering of Members on 7th October, 1950.

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The Rock Garden as it now stands was constructed entirely under the supervision of Mathews, and solved the problem (which some critics declared to be insoluble) of growing Aloes, Euphorbias and other large succulents at Kirstenbosch. This section of the Gardens is now one of its most successful and interesting parts. It may be recalled that the construction work was financed by grants from the Life Members' Fund of the Botanical Society, and that the Society has voted a further sum for its extension, which is now highly necessary.

Just as Kirstenbosch was said to be " too damp for Aloes ", so it was thought to be " too damp for a Herbarium ". This idea has also been falsified by experience. The Herbarium of the National Botanic Gardens has now been established for ten years, and contains nearly 50,000 sheets of specimens, drawings, photographs, etc. Thanks to elementary precautions, no trouble from damp has been experienced, and any fears on this account have been allayed.

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The achievement of growing Cape plants—Ericas, Proteas, bulbous plants, annuals—in Johannesburg is the unpredictable result of another " unlikely " experiment. The contrast in climates and soils is enormous; yet gardening skill and enthusiasm have achieved a success even more improbable than that of growing summer-rainfall Aloes and Euphorbias at Kirstenbosch.

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This number of the JOURNAL is largely devoted to contributions from Johannesburg. Miss Gwen Edwards, who is now guide-lecturer at " The Wilds ", gives an account of that most promising garden of indigenous plants, and Dr. N. R. Smuts, of Turffontein, has written an article which should be given careful consideration by Horticultural Societies in the Union.

Sincere appreciation is felt for the generous and enthusiastic work that is being done by Miss Edwards, Dr. Smuts, Mr. Reynolds, Mr. Hardcastle, Mr. and Mrs. Sutton and many others on the Rand to make the Botanical Society known to garden and flower lovers there. The demonstration of how well Cape plants can be grown there is giving their work a special fillip, and they have already enrolled a considerable number of new Members — a noteworthy achievement for a Society whose headquarters are a thousand miles away.

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In 1922 a bulletin, which has long been out of print, was published from Kirstenbosch on the Cultivation of Buchu. The Curator, Mr. H. F. Werner, has now written a new article embodying subsequent experience. This is printed in the present issue of the JOURNAL and, in the form of reprints, will be useful in answering the numerous enquiries on the subject which reach the Gardens office.

The British Military Cemetery near Florence, Italy, contains the graves of many South Africans. When Professor and Mrs. Compton visited it in May, 1949, they greatly admired the gardening work that was being done and the display of flowers; but no South African flowers were being used. Seeds were accordingly obtained from Kirstenbosch, and were warmly welcomed by the Superintendent. A visitor to the Cemetery in April, 1950, spoke with enthusiasm of the splendid display of Gazanias and other South African plants which she now found there.

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It is gratifying to record that the privilege of free railage for botanical specimens addressed officially to the National Botanic Gardens (Kirstenbosch and the Karoo Garden, Worcester), of which they had been deprived for three years, has now been restored. The same applies to other Museums, etc., in the Union.

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Of all parts of the Union, the Cape Peninsula is one of the most beautiful, most interesting botanically, has the longest and most romantic history, and has two of the world's best-known and most famous landmarks—Table Mountain and Cape Point. And of all parts of the Union, it is the most vulnerable to fire and defacement. It has suffered from haphazard exploitation, the ravages of fire, the invasion of weeds and the vandalism of man to a lamentable extent.

The realisation of this, not by the people of Cape Town alone, but also by those in other parts of the Union, has recently led to two encouraging developments. One is the recognition by Government of the Cape Peninsula Fire Protection Committee and the grant of £15,300 for the first year to enable the Committee, acting in conjunction with local authorities, to prevent and control bush fires. The Committee will have compulsory powers which it is hoped will be used with firmness as well as discretion.

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The other development is the appointment by the Minister of Lands of the Table Mountain Preservation Committee. This action was stimulated by the joint representations made to the Government by local Societies and organisations (of which the Botanical Society was one) two years ago. It recognised that Table Mountain is a national asset, of more than local importance, the concern of the Union as a whole.

The Committee is taking evidence from individuals and organisations with special knowledge of and interest in the many aspects of the Mountain, its natural features and its control. The Botanical Society has collaborated in the representations put forward on behalf of the principal local conservation societies by the Joint Mountain and Veld Conservation Committee; it is also putting in an independent statement of its views.

The Society's watchword in this matter is Conservation: this is the main object which must be secured. The Committee's problem is the very difficult one of deciding what form of control will achieve conservation in the fullest possible degree.

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The Wild Life Protection Society has been very active in the Western Cape Province recently, and has many useful pieces of work to its credit. The Western Province branch has been consulted in the greatest detail in the preparation of the draft Wild Life Protection Ordinance about to be brought before the Provincial Council. It has investigated the Outeniqua National Park project, visited the Bontbok Park and the Cape of Good Hope Nature Reserve, secured the protection of tortoises and chameleons against export, obtained publicity for a large number of wild life subjects, and is doing a great deal towards the preservation of our fauna and flora. It needs a much greater membership, which its efforts richly deserve. The address of the Secretary of the Branch is P.O. Box 1313, Cape Town, and those resident in the western half of the Cape Province are invited to send their subscriptions (Membership £1 1s.). They will receive the excellent quarterly "African Wild Life", News Sheets, etc.

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The project for the establishment of a National Park in the Outeniqua Mountains is making satisfactory progress. The Wild Life Protection Society (Western Province Branch) has made an expedition to the area, and has reported enthusiastically about the scheme. An official investigation followed soon after, and its report, in which that of the Wild Life Protection Society was extensively used, was submitted to the Scientific Advisory Council for National Parks and Nature Reserves. We are not at liberty to comment on its reception, but in view of the fact that the new National Park would be very largely a reserve for the salvation of the indigenous flora, the Botanical Society will wish the project full success. An article advocating the scheme was published in this JOURNAL, Part XXXIII, 1947.

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The effect of afforestation upon water supplies has been ably analysed and discussed by Dr. C. L. Wicht (Dept. of Forestry Bulletin 33, 1949). Much is still uncertain and awaits the result of the experiments which are in progress. But it is clear, incidentally, that the relative importance of this subject has been much exaggerated, when compared with the obvious, flagrant and destructive results of much current agricultural and pastoral practice over great areas in the Union. The work of the Forest Department is mainly constructive and conservational; our farming methods are largely exploitational. Dongas, dust-bowls, sheet erosion, lowering of the water table: these are the phenomena the country should take note of and whose cause and cure should be studied. It is the advancing desert that should be fought, not the Forestry Department.

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We regret to record the deaths of the following:

Mr. Hugh Basil Christian, a Member of the Society; an authority on the Aloes north of the Limpopo, on which he wrote articles in the Journal of South African Botany; the founder of a noteworthy garden of indigenous plants at Arcturus, Southern Rhodesia.

Mrs. Sarah V. Coombs, a Member of the Society; author of "South African Plants for American Gardens"; lived at Kirstenbosch for several months in 1934; prominent in the world of garden clubs, floral arrangements, etc., in eastern U.S.A.

Dr. G. C. Nel, Professor of Botany in the University of Stellenbosch; author of book on Lithops; commemorated by *Pleiospilos Nelii* and other succulent plants.

Mr. Harry J. Butcher, a member of the Society; greatly interested in cultivation of indigenous and other plants; a valued contributor to the Kirstenbosch collections; commemorated by *Dietes Butcheriana*.

Rev. F. J. Gerstner; missionary in Zululand; authority on Zulu medicine and plant names; plant collector and contributor to Kirstenbosch; author of several new species and articles in the Journal of South African Botany.

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The photograph of the entrance to the Karoo Garden, Worcester, published in the last JOURNAL, was wrongly attributed, and we apologise to Messrs. Frickers Photo Service, who took the photograph, for the mistake.

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Mr. E. J. Scholtz, in his Presidential Address to the Cape Natural History Club on 31st August, 1949, said:

> "I want to emphasise that there is only one way of making a success of the pastime [of growing indigenous plants], and that is growing your own subjects from seed. Nature protects herself; if you set out with the object of obtaining your plants from the veld, rooting out what appealed to you and transferring them to your garden, the attempt would end in utter failure. . . .
>
> "And here, I think, it would not be inappropriate to pay a tribute to Kirstenbosch. We, living in this glorious Cape of ours, are singularly fortunate in the lovely natural floral surroundings we have for continuous enjoyment. But little appreciation, I am afraid, do we show for it. And then to cap it, Kirstenbosch is there to give us as fine a selection of seeds of beautiful veld plants as one could possibly desire, and at a cost which bears no comparison with the value of those seeds. There is no other centre in South Africa where anything similar is done, and I make bold to say that nowhere in the world does a garden-lover, and moreover one specially interested in his native flora, enjoy a similar unique privilege. We should have a Membership of our Botanical Society at least five times what it is to-day."

A Tip for Horticultural Societies

By N. R. SMUTS

THERE is no doubt that a big proportion of people in this country are fond of a garden—one has only to see the transformation that takes place within a matter of months when a new suburb is built in one of our large towns. There is equally little doubt that indigenous subjects form an almost pathetically small proportion of the flowers grown by the average gardener. One refers not to the big gardener who may be a member of a horticultural or botanical society, nor to the person who has been brought up amidst wild flowers, but to the ordinary average man in the street. Those of us who wish to stimulate a wider interest in South African flowers, their protection, cultivation, and propagation, must think more in terms of John Citizen's garden—John Citizen, who grows stocks because he saw them making a brave show in spite of the frost in the local public gardens—Texas centennial because he saw it at the local flower show—phlox Drummondii and petunias because a local seedsman tells him they'll do in any soil and give him a quick blaze of colour—dahlias because he sees them flourishing in the garden of a neighbour who can spare a few tubers—an aloe because it is the only wild plant he sees on a near-by koppie. John Citizen, whose garden can be improved by indigenous subjects, whether he's living in the Karoo, in the mist belt of Natal, in the frosty highveld, or in the winter-rainfall area of the Cape.

In other words, show John Citizen wild flowers grown in his particular locality, tell him where to get them, and he'll want to grow them, not merely because they're South African, but because he realises that his garden will be the better for them; *and*, the greater the public interest in wild flowers, the greater the fruit of propaganda for their protection.

Public parks and gardens can demonstrate very effectively what can be grown locally. Some local authorities do realise the onus on them to show the public as much of our wild flowers as possible, realising that with a little careful planning they can at the same time improve their parks and gardens with such subjects. To take a couple of random examples: the aloes in the streets of Tulbagh are an unforgettable sight in July; the Alexandra Park rockeries in Pietermaritzburg are a fine achievement; a joyful surprise in a prolonged Karoo drought at Aberdeen (as far as one can remember) were some wild things standing up to the dreadful conditions of drought in a way no 'garden' flowers could. A fine example of what can be done with subjects which grow naturally in very different conditions in various parts of the country is to be seen at The Wilds, the Johannesburg municipal wild garden; it is really amazing to see such 'foreign' subjects as heaths, proteas, keurbooms and a multitude of others flourishing under highveld conditions. That these wild flowers are a great attraction to the public is clearly proved by the fact that as many as 2,500 people have visited The Wilds in a single week-end.

But haven't our horticultural societies been losing an opportunity of helping themselves? The experience of the Southern Suburbs Horticultural Society in Johannesburg may be of profit to others. Some months ago this society, not a very big one, decided that its shows would have a separate section for indigenous flowers, cultivated by the exhibitors, not gathered in the veld. The section was divided into the following classes: (1) An arrangement of South African flowers in any suitable receptacle; (2) single vase of one indigenous flower (one or more blooms); (3) group of three; and (4) group of six vases of indigenous flowers, three and six distinct species or varieties; (5) a collection of South African flowers in one or more vases; (6) pot of any indigenous flower or plant; (7) group of indigenous succulents not to exceed three specimens of one species, and not to exceed twelve species. The organisation of this section entailed very little extra work.

The results at its first show were quite surprisingly good. No less than 396 square feet of table space was required to stage the indigenous exhibits, about one-sixth of the whole show. Of this, 36 square feet was taken up by a S.A. Railways exhibit, and 54 by a display from The Wilds which was magnificent in its variety. The other 306 was taken up by wild flowers grown by individual exhibitors. In spite of limited publicity and the comparative inaccessibility of the hall where the show was held, great interest was taken by the public, and the society took its record gate. To quote from the *S.A. Home Gardener*, 'Indigenous flowers and plants were the outstanding feature of the show, and probably provided the most comprehensive and interesting collection of these ever seen under one roof.' And this was the initial effort of a comparatively small suburban society.

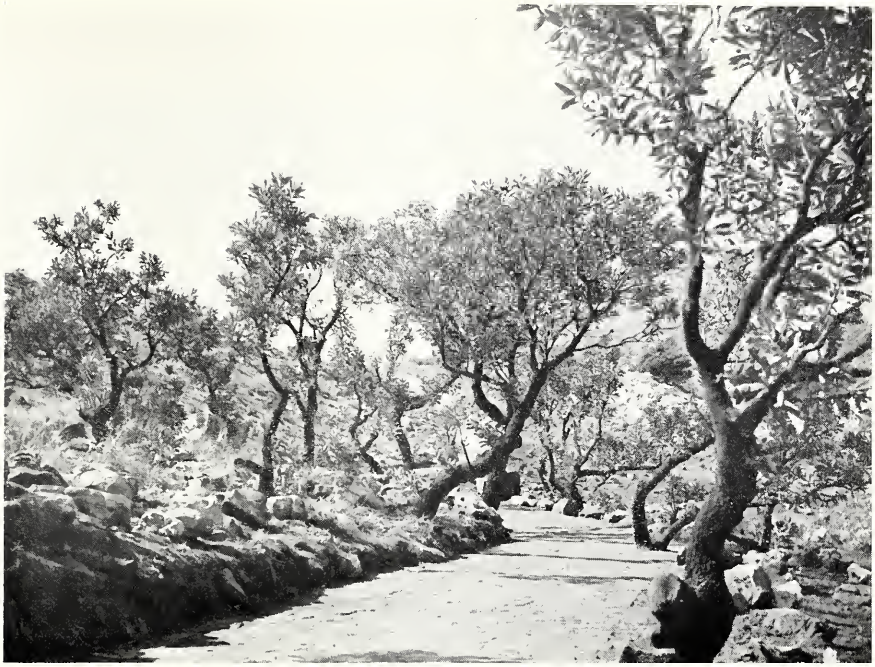
Ancillary to the exhibition of wild flowers was a small stall with placards and posters drawing attention to the S.A. Botanical Society and the National Botanic Gardens, and to the advantages of membership—the society's seed list was displayed and membership forms were available. In this way the public realised one way of obtaining indigenous material.

It is submitted that every horticultural society in the country would gain, financially as well as otherwise, by arranging a separate section for indigenous flora at its shows, would help John Citizen to see what could be grown locally, and would help tremendously in promoting interest in our wild flowers. One horticultural society with a large membership is already following in the steps of the Southern Suburbs.

A corollary to the exhibition of wild flowers is the nurseryman's and seedsman's activities. It is true that in the past some have stocked indigenous plants only to find little demand for them. But if John Citizen sees wild flowers in public gardens and at shows, and at the show sees a nurseryman's stall with these flowers, or even placards indicating that he can supply them, the nurseryman will soon realise that it is worth his while to cater for a demand which is already undoubtedly on the increase. The first nurseryman in Johannesburg who can supply heaths is going to reap a richer harvest than one whose show stall has a fine exhibition of roses.

And a word about aloes. Why don't our public gardens and horticultural societies do something to widen public knowledge of them? One sees the same old dozen or so species, nearly all winter-flowering. Why does John Citizen never see such gems as longistyla, brevifolia, mudenensis or the superb globuligemma × Marlothii and Davyana × Marlothii hybrids, or the summer-flowering ones, such as integra, hlangapies, kniphofioides and parvispina? Fortunately a long-awaited book on our aloes should be published this year, and this may be the start of a wider knowledge of, and interest in, one of our finest hardy wild flowers, of which some species or other can be found in flower almost every month of the year. The day may even come when nurserymen can supply named species.

A last word to horticultural societies. All lovers of South African flowers appreciate the debt we owe to the National Botanic Gardens, and some know of Kirstenbosch's financial difficulties. The writer would like to see a regular custom become the rule between all members of horticultural societies, namely, that whenever plants or seeds are exchanged or given away, a small contribution is made for the National Botanic Gardens—say, half a crown for a shrub or other established plant, a shilling for small commoner plants, and sixpence for seeds or cuttings. Surely no one would grudge such small contributions. If such a custom became a generally recognised obligation, the collective total throughout the country would be of assistance to the only organisation which has really achieved much for our wild flowers.



1. Protea Bush in The Wilds, Johannesburg.

2. A Nature Study Class at The Wilds.

PLATE III

J. W. MATHEWS, Curator of Kirstenbosch 1913 — 1936

Joseph William Mathews

—FIRST CURATOR OF KIRSTENBOSCH—

J. W. Mathews was born at Bunbury, Cheshire, England, on 7th April, 1871, and died at Durban on 28th September, 1949. He was married in November, 1906, and his wife (née Greenhill) died in December, 1936, the year of his retirement from Kirstenbosch. He is survived by his daughter, Mrs. J. G. Reed, of Durban.

Mathews was trained at Kew, and left England in 1895 to come to a post in the Cape Town Public Gardens. Later he set up as a nurseryman and florist in Roeland Street, and his energy and enterprise in his business marked him out for the post in which he was to attain distinction. He is believed to be the first introducer of tree carnations to South Africa, as well as of several new roses. (His ability to distinguish garden roses from one another by their vegetative characters alone was astonishing). During this period he won large numbers of prizes for roses, carnations, dahlias, bouquet-making, etc., and may be considered as one of the founders of floriculture in South Africa.

In 1913 he was recommended by Pearson as Curator of the new establishment at Kirstenbosch, and during the next three years the main lines of the Gardens were brought into being. It had been proposed to bring an expert from Kew to advise on the layout; the war prevented this, but Pearson's vision and Mathews' practical skill brought the beginnings of order into the existing jungle. The Terrace, the Lawn, the Dell, the restoration of the old Bath, the Cycad Amphitheatre, the Protea Garden, were all initiated then; subsequent development has sprung from those well-laid foundations, and experience has only altered them in detail. After Pearson's death in 1916 Mathews followed out the plans which then only existed in his mind; and after the arrival of the new Director in 1919, his practical common sense and what he called " savvy ", as well as his stern insistence on economy, were often decisive in determining what could and what could not be done with the shockingly meagre resources then available. Little by little the Gardens grew, with Mathews very definitely in control of every detail.

Finance was always inadequate, salaries and wages low, and all sorts of expedients were necessary to make ends meet; but the discipline then enforced by Mathews showed Kirstenbosch as a place where, with good will, much could be done for little. During the years that followed the Protea Garden was greatly enlarged, the Erica Garden was begun, the new Nursery was established, the layout of the Dell was completed, paths were cobbled, grassed or gravelled, water and drainage systems were installed and, most striking achievement of all, the Rock Garden (which is to bear Mathews' name) was constructed for the reception of succulents.

Mathews' activities were not confined to garden construction. He dealt with the flood of contributions of plants with which early enthusiasts almost submerged all other work. He was at everybody's call for information and advice—and some garden-lovers can be very demanding and time-absorbing. He collaborated in botanical studies, where his trained floricultural eye was of great value. He wrote a series of articles on the cultivation of special groups of plants at Kirstenbosch, which were published in this JOURNAL. He wrote a book entitled " The Cultivation of Non-Succulent South African Plants ", which is a mine of information otherwise not readily available, based on Kirstenbosch experience and useful in conjunction with the Gardens seed lists.

His work was recognised by the Royal Horticultural Society, which bestowed upon him the distinction of Associate of Honour.

Mathews was a gardener of the old school: stocky and sturdy in build, a fount of energy, not sparing himself and expecting the same of others, sternly economical, practical to his finger-tips in all the multitude of tasks which fell to him for lack of adequate staff, loving his plants first and foremost, devoted to Kirstenbosch. " The work at Kirstenbosch," he said, on his retirement in 1936, " should be a labour of love in the greatest job ever begun in the botanical world, and I feel that it is an honour to have had anything to do with that job." Those who knew him best knew how much of himself he put into that job.

R. H. COMPTON.

The Wilds

By GWEN EDWARDS

KIRSTENBOSCH National Botanic Gardens were, I believe, the first in South Africa to be developed for indigenous plants only. Since their beginning in 1913, they have directly or indirectly inspired the creation of many other gardens in different parts of the Union. The Kirstenbosch system of seed-distribution has considerably helped most of the newer gardens.

One of these younger gardens is situated about two miles from the centre of Johannesburg in the suburb of Houghton. It is about 45 acres in extent and lies on either side of Houghton Drive, one of the show routes leading out of Johannesburg to the north. The whole of this land was given to the City Council by the Johannesburg Consolidated Investment Company on condition that the existing indigenous growth should be encouraged and protected and that exotics, which were rapidly spreading, should be exterminated.

Just about the time when the Council took over The Wilds, Mr. van Balen, then Superintendent of the Government Gardens at the Union Buildings, Pretoria, was appointed to the Parks and Estates staff of the Council of Johannesburg. From the beginning he was enthusiastic about this gift of land and is the moving force behind its development.

Mr. van Balen grew up in Holland, spent some time at Kew and eventually came to South Africa to the staff of the Public Gardens in Cape Town. While there, he was a frequent visitor to Kirstenbosch, and his chief reaction was one of bewilderment at the tremendous variety of indigenous South African flora. Eventually he went to Pretoria and from there went to see for himself Namaqualand in the height of a magnificent display of spring flowers. He was fired with the ambition to bring such beauty within reach of Transvaalers who would never get the opportunity to visit Namaqualand at all. With this idea in mind, he laid out the charming South African garden at the Union Buildings—a garden that has, perhaps, never received the recognition it deserves. From the experience gained in Pretoria Mr. van Balen passed straight to the planning of The Wilds, a task after his own heart.

From the beginning Mr. van Balen opposed the recommendation of the J.C.I. Company that The Wilds should be a nature reserve. With his Parks training, he was eager to add indigenous plants which would enhance the local flora and would create a park with a difference. He wanted Johannesburg residents, too, to visit a Namaqualand spring at their own doors. In this ambition he has abundantly succeeded. Just as Dr. Pearson was lucky in his choice of the late Mr. Mathews as curator of Kirstenbosch, so Mr. van Balen is lucky in having Mr. Diesel in charge of The Wilds. Mr. Diesel is an artist and enthusiast with a great belief in the possibilities inherent in the growing of South African flowers. Mr. Diesel received his early training under Mr. F. R. Long, then Director of Parks in Port Elizabeth.

The Wilds is composed of rugged koppies which ‘form a fault-area in the geological structure of the Witwatersrand’. The north-west portion is about 21 acres and was the first part to be developed, while the south-eastern, about 24 acres in extent, has only recently begun to be laid out because of difficulties arising from World War II. The Wilds is situated on a part of Houghton Ridge which is made up of ‘medium-hard quartzite having many fissures. At certain places there are outcrops of the underlying soft brown shales. There is little good soil on The Wilds.’

The quartzites and the shales each carry their characteristic flora. For instance, there are numbers of the local summer-flowering proteas (*Protea caffra*) in the shale, whereas none normally occurs in the quartzite. There are beautiful formations of weathered rock, krantzes and outcrops, as well as grassy slopes where much of the original vegetation persists. On the south-easterly portion of The Wilds, there is a narrow strip which communicates at its eastern end with Munro Drive. Private property marches above and below with this part, and in some cases the owners, after ruthlessly removing the indigenous growth, have substituted alien trees and shrubs. This is a pity because the sudden contrast prevents a satisfying feeling of complete restfulness. Intelligently used, the native growth can make a beautiful canopy and setting for garden annuals.

Work on the development of The Wilds’ koppies began on October 5th, 1938. Although not setting up to be a botanical garden, there is much to see of interest botanically. On the whole the general public has little knowledge of our indigenous flora, but wild-flower gardens help more than anything else to stimulate their interest. The Wilds has done a great deal to bring home the beauty of wild flowers to local residents, to visitors from other parts of the Transvaal, from the other three Provinces, from the Rhodesias, the Congo, in fact, from all parts of the world. The visitors' book at The Wilds provides most interesting reading, and the periodic ' counts ' of visitors prove that the park is visited by a very great number of people annually.

In March, 1949, a Guide-Lecturer was appointed at The Wilds to be at the disposal of visitors to answer questions and to keep up a named-flower display which has proved of great interest. There are sometimes sixty to seventy named-flowers on display at once. Classes come from local schools and from along the Reef to find help, interest and encouragement. The classes range from babies attending nursery schools to students from the university and training colleges. It is never too early to implant in the young a love and feeling of responsibility for indigenous flora and fauna. The lecturer, moreover, is not hampered by set syllabi, but may freely use the material supplied by The Wilds itself at the different seasons.

The Wilds is quite rich in local flora. Of the outstanding trees, one might mention ' mountain vaalboom ' (*Brachylaena rotundata*), 'spekhout' (*Kiggelaria africana*), ' wit stink-hout ' (*Celtis kraussiana*), ' suikerbos ' (*Protea caffra*), ' mispel ' or ' wild medlar ' (*Vangueria infausta*), *Gardenia rothmanii* (' katjepiering ') and *Mundulea sericea* (' olifantshout ' or ' cockbush ').

Among the shrubs, the lovely wild apricot (*Landolphia capensis*) trails its sweet-scented white flowers over the rocks. There are several species of Rhus which show beautiful autumn colouring and attractive fruits. Some of them have highly coloured spring foliage. For instance, the young leaves of *Rhus magalismontanum* vary from light to deep red, while on some bushes they are a delightful silvery-magenta pink, a quite unusual colour for young leaves. There is a fig (*Ficus ingens*) which at this altitude clings to the rock fronts but which, in the lowveld, grows to a considerable tree. The young leaves come out bright red, which deepens to copper and then changes to young, fresh green. *Myrsine africana*, with its tiny, often plum-coloured leaves, is specially delightful when producing its purple, bloom-covered berries. Chrysophyllum, the Magalies plum, is very handsome and is characteristic of these parts.

The bright heads of flowers produced by *Brachymeris athanasioides* brighten the koppies with gold in early spring. *Lopholaena corifolia* has pale-coloured leaves and flowers, while the bright green of the ' wild coffee ' leaves (Canthium sp.) make one feel that spring has really come after the lion-tawny colouring of the highveld winter. Pavetta species and Lachnopylis carry pretty posies of white flowers in spring. *Gymnosporia buxifolia* (' pendoring ') is a lovely sight with its long plumes of white flowers, but unfortunately its scent is not as delectable as its appearance. It is, however, beloved by bees. In July, the wilder slopes are noted for the fairly low-growing, vermilion *Aloe davyana.*

In summer come the silver-pink, sweetly scented flowers of *Clematopsis stanleyi*, the bush clematis, from which a very beautiful hybrid plant has arisen. It is thought to be a cross between *Clematopsis stanleyi* and the climbing ' travellers' joy ', *Clematis brachiata*. It has attracted a great deal of attention from botanists, some of whom are busy working out the parentage. The type species was first recorded from that portion of Houghton Ridge which is now The Wilds.

There are a great number of herbaceous plants which spring up in succession after the rains begin. One of them is *Vellozia retinervis*, the ' baviaan's stert '. All winter it juts stark and burnt-looking stems from the ground. In early spring it throws out quantities of delicate stems bearing frail, bell-shaped flowers in shades from white, through pale mauve to deeper blue or pinky mauve. There is an indigenous Gazania and it and Pentanisia (' wild verbena ') are the first messengers of spring. There are a number of vernonias, all purple-headed, but some species have silver leaves, and flower at the same time as the small *Aloe verecunda.* There are many wild composites, including various everlastings, wild peas and ipomaeas. There are many strikingly beautiful grasses of varying habits, heights and colourings, but the red rhynchelytrums are among the loveliest. Our local *Erythrina* (*zeyheri*) has been dwarfed, possibly by the altitude, from the tree height of most of the kaffir-booms. It throws up scarlet flower spikes and decumbent, spiny, very large leaves. Its local name is ' prickly cardinal '.

Since the municipality took over The Wilds, many indigenous plants from other parts of South Africa have been introduced. In spite of the fact that the

Transvaal climate is quite different from the conditions prevailing in the Western Cape, many of the brilliant annuals and perennials of the Western Province and Namaqualand are grown with considerable success. In addition, such typical Cape shrubs as the various proteas and beautiful Cape heaths succeed remarkably well and evoke the admiration of visitors from the very localities where these plants are indigenous. It is remarkable how many plants, growing naturally in a frost-free climate or in a winter-rainfall area, can adapt themselves to the rigours of a highveld winter.

Some other introduced plants may be noted. Cycads grow very successfully. There are some large *Encephalartos caffer. E. altensteinii, E. villosus, E. horridus, E. kosiensis* are all represented. Two fine specimens of *E. transvenosus* have recently been transported from Geldenhuys' farm, where they were brought many years ago from what is now a sanctuary at Majaji's Kraal near Duivelskloof. *Podocarpus falcatus* does well at The Wilds and two species of Widdringtonia. *Virgilia oroboides* is successful, but *V. divaricata* flourishes exceedingly and makes a fine show with its deep-coloured blooms. *Podalyria calyptrata,* both the pink and the white, flowers abundantly for a few weeks in the spring.

The Wilds puts up a good show of Agapanthus and Kniphofia—both often flowering together. Year by year the number of species of Agapanthus is building up. It is perhaps more than a pious hope that there will soon be a species of Agapanthus for every month in the year. Watsonias do extremely well here, whereas in Pretoria, not quite 40 miles away, they grow reluctantly or not at all. Here again there is a large succession of species and hybrids.

Besides the many Dimorphothecas, Senecios, Venidiums, Nemesias, etc., which make The Wilds in spring a brilliant colour patchwork, one must mention the gorgeous spread of Ficoids. These find their optimum on the natural rock formations, and thousands of new plants are set out every year. Aroids and Amaryllids (especially *Cyrtanthus obliquus* and Nerine species) like this climate, but *Amaryllis belladonna,* although leafing well, does not get a chance to dry off (because of the summer rainfall) and so does not flower. Of other monocotyledons, Sparaxis and Tritonias are lovely, but Babianas, Ixias, etc., although flowering freely, are somewhat dwarfed, possibly by the dry quality of the winter air.

The bright flowers and inviting lawns of The Wilds provide an attraction to hundreds of flat-dwellers. Being within easy distance of the town, served by a regular bus service and accessible to numberless cars, this park acts as an object lesson in the layout of natural gardens. Many Johannesburgers spend a great deal on their gardens and here they can see virgin koppie cared for, planted, made to blossom freely and far more attractively than if the koppies were blasted, terraced and otherwise mutilated. This used to be a common treatment in earlier years.

The Wilds is by no means complete. The Director has many plans. It is proposed to run a cascade over one of the steep, rocky walls and to lead the water down the valley through a number of water gardens. He plans to extend the lawns down between the ridges and to make a colossal rockery to replace the present Munro Drive embankment. There is no end to plans in the minds of the curators, but finance is a stumbling-block and The Wilds, in common with gardens 'tame' and 'wild', will never reach a stage where the planning is complete.

From the beginning Kirstenbosch has been a kindly friend and helper. Pretoria has contributed in many ways. There is friendly exchange between various parks and municipalities, between the different provinces; and private donors send gifts in kind. Just lately there have been some valuable donations of plants. The Superintendent of Parks in Salisbury, Southern Rhodesia, has sent 400 cuttings of *Aloe cameroni* and *A. pole-evansii.* This Aloe lives in frost-free mist belts, but The Wilds hopes to make it feel at home on the north-western slopes of the New Wilds. The Chief Horticulturist, S.A.R. and H., has presented some large Euphorbias, Aloes and Encephalartos (Cycads). The Town Council of Ladysmith has resolved to present The Wilds with 100 large Aloes from the town lands, the Superintendent of Parks at Pietermaritzburg forwarded a truckload of *Aloe candelabrum* in various sizes. Through this valuable assistance The Wilds is becoming, in its flora, more and more representative of the Union.

The multiplication of nature reserves and indigenous plant parks is bound more and more to direct public interest to the wonderful indigenous flora of South Africa. This interest should make them want to preserve it from destruction. Certainly there is a local urge—noticeably increased in the past few years—to grow these Prides of Africa in their own gardens for their delight.

The Cultivation of Buchu

By H. F. WERNER

INTRODUCTION.

SINCE the appearance of the pamphlet, *The Cultivation of Buchu,* by R. H. Compton and J. W. Mathews, issued by the National Botanic Gardens in 1921 and long since out of print, there has been a steady demand, which has considerably increased of late, for information on buchu growing.

Revised and additional information, especially in respect of propagational, cultural and drying methods, is now supplied—together with some information contained in the original pamphlet, for which due acknowledgement is made.

It should be stressed that the information given is based on methods and conditions under which such satisfactory results have been obtained at Kirstenbosch.

SITE.

The site of the experimental plantation is that of an old vineyard and is on a sunny slope with a northern aspect, but the slope could, with advantage, also be eastern or south-eastern by virtue of being more moist. Overhead shade is detrimental.

The gradient is about 1 in 15, which gives a steady run-off for heavy rains.

SOIL.

The soil is deep, reddish, light to medium loam, and the subsoil a reddish clay with seams of quartz gravel and ironstone.

CLIMATE.

The rainfall at Kirstenbosch is comparatively high (average 55.5 inches per annum). The atmosphere is moist at most times, with an absence of scorching days in summer under which certain districts labour. Low temperatures occur in winter but frost has not been recorded.

The climate of the winter-rainfall area is naturally suited to the requirements of buchu, and generally throughout the western and south-western districts it will thrive with the minimum of attention.

'Dry' cultivation is practised but, in districts of low rainfall, irrigation would be necessary: it is, however, a moot point how much frost the plant will withstand. In summer-rainfall areas watering during the winter would have to be resorted to.

PREPARATION OF LAND.

In establishing a plantation it should be remembered that buchu is a fairly vigorous shrub and therefore deep ploughing or trenching is necessary for resistance to drought, productiveness and the longevity of the plantation. Incorporation of compost would be very beneficial—likewise an application of bonemeal.

The land is prepared with the advent of the autumnal rains, and the soil should be brought to a fine tilth.

Where it is intended to grow buchu on stony hillsides it would be necessary to prepare spots at intervals, in lieu of ploughing, for reception of the plants. Crops on such sites would, of course, not be so good.

SEED SOWING.

Seed takes about a month to germinate and results are invariably poor. The most practical method of raising seedlings is the seed-bed method, sowing the seeds from March to April; nursery beds about 4 feet wide, and any convenient length, are prepared in good light to medium soil. These beds should be in the open.

If the soil is dry a watering should be given the day before as a preliminary to digging. After digging, some compost and a dusting of superphosphate (about 2 oz. per square yard) are spread over the beds and *forked* in. The beds are firmed by treading and then raked level.

Drills, about $\frac{3}{4}$ inch deep, at 6 to 9-inch intervals across the beds, are drawn out or made by pressing a piece of wood into the beds to the requisite depth.

After the seeds are sown the beds are given a watering with a rose-can and, in the absence of rain, are kept moist by regular watering. An even degree of moisture is to be aimed at, as fluctuations will affect germination.

Where it is preferred to sow seed *in situ,* in prepared land, the seed is sown in rows (4 feet apart) in drills ($\frac{3}{4}$ inch deep) and should be sown fairly thickly (about 3 inches apart in the drills) to ensure a good stand. Sowing *in situ* is not now used at Kirstenbosch in view of the ultimate irregular spacing as well as work of resowing or planting for gap-filling, etc.

TRANSPLANTING.

Where seedlings are raised in seed beds the seedlings can either be lifted and transplanted, as soon as possible, into tins for growing on or, alternatively, transplanted direct from the seed beds into their permanent positions.

In the former method 2-lb. jam tins, with one or two holes in the bottom for drainage, could be used. The seedlings must be handled carefully, also the roots not allowed to shrivel (the plantlets should be kept in damp moss or under a damp cloth).

They should be tinned fairly firmly, using good, light soil with some compost or leafmould, and perhaps a light dusting of superphosphate added. The soil should be moist.

The plants should be watered in and, if necessary, shaded for a few days, after which they will be able to stand full sun. The plants should be kept moist but not too wet, and the tins stood close together in blocks, with pathways between.

They are planted out from the tins as one-year-olds, this coinciding with the rainy season. Before removing the plants from their containers they should be given a good watering; the ball of soil is then compressed by squeezing the top of the tin, and then, with the plant between the fingers it is inverted and, with a few sharp taps of the trowel, the whole plant will slide out intact.

The plants should be planted firmly and given a good watering. Distances for planting out are 4 feet between rows and about 2 feet between plants.

The method of transplanting direct from seed beds to permanent positions requires care in lifting, transporting to the site and planting out. A high percentage of losses can occur if the plants are handled carelessly or the plants allowed to become too big (about 1 to 2 inches high is an average size for planting out). Firm planting and watering in are important points, while planting out in cool, dull weather would be very advantageous.

CULTURE. During the first year the young plants receive a 'stopping' by the removal of the soft, growing tip about 3 inches from the ground, when growing well, to induce bushy growth. At two years cut back in February from 1 to 2 inches above the first year's stopping, and so on, annually, the resultant bush slowly increasing in surface area, and yielding a maximum of leafy twigs.

Old plantations benefit by the application, in autumn, of well-rotted manure or compost and some balanced fertilizer (2 oz. per square yard). Weeds should be kept down.

HARVESTING. The best time for harvesting is about February. The shoots should be cut with a pair of secateurs or, in the case of older bushes, with hedge shears—always remembering to cut an inch or so above the previous year's cut, and not into the old wood. Harvesting should not be performed by tearing or breaking off the branches, as this causes injury and induces dead wood.

DRYING. Drying should be done as quickly as possible, and to keep a good colour it is essential it should be done in shade. A corrugated iron roof, with open or latticed sides, is an ideal structure. The floor should be of concrete for cleanliness. The crop should not be dried in heaps on the floor, but preferably in large trays, which slide into racks, erected in the shed.

The drying trays at Kirstenbosch are 8½ feet wide, 6½ feet long and 6 inches deep. Constructed from wood, they have ½-inch wire mesh bottoms (strengthened by five battens, 6 inches wide) across the bottoms to prevent the wire sagging. The trays slide above each other into the racks, with a clearance between trays of about 1 foot for free circulation of air.

The contents of each tray are turned and shaken loose at least once a day. This is extremely important, as great care should be taken to avoid sweating, otherwise a considerable loss of oil would result. The dried buchu should be as green as possible and not a whitish colour, which is characteristic of sun-dried buchu which has, in consequence, lost a large amount of its oil content.

When the leaves are commencing to drop they may easily be removed from the shoots. As the trays empty they are replenished. Drying of each batch takes from 5 to 7 days.

The dried leaf is finally bagged and should not contain more than 5 per cent. of the small green stems and none of the larger ones.

COMMERCIAL BUCHUS. *Barosma betulina* ('Round Leaf' or 'Rondeblaar') is the most valuable; the leaves are somewhat wide in proportion to length and the apex of each leaf is slightly reflexed. The dried leaves of this species are official in the *British Pharmacopoeia*.

Barosma crenulata has oval-shaped leaves.

SEED. Seed is difficult to collect: when the capsule is ripe it bursts and the seeds are thrown some distance. In gathering, this stage must be anticipated a little, likewise the capsules should be dried in the sun on trays, etc., with light hessian laid over to prevent shooting away of the seeds.

To ensure a crop of seeds from cut-backs it would be necessary to allow the bushes to develop uncut for two years at least.

Seed is the best means of propagation; cuttings can be struck but this method is not recommended for general usage.

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MARY MAYTHAM KIDD

assisted by CAPTAIN (S) T. M. SALTER, R.N. (RETD.), with Text and Nomenclature

Foreword by

FIELD-MARSHAL THE RT. HON. J. C. SMUTS, O.M., F.R.S., M.P.

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THE FOLLOWING IS THE SOCIETY'S PROGRAMME FOR 1950
as printed on the Membership Card.

Monday, March 27th, at 8.15 *p.m.*
Annual General Meeting. "Floral Heritage" and other ciné-films by Mr. K. F. Howes-Howell. Lecture Hall, Kirstenbosch.

Tuesday, May 23rd, at 8.15 *p.m.*
Coloured Slides of S.A. Wild Flowers by Mr. Reg. Nicholson, with Commentary by Miss K. C. Stanford. Lecture Hall, Kirstenbosch.

Tuesday, June 20th, at 8.15 *p.m.*
Illustrated Talk "The Royal Botanic Gardens, Kew" by Mr. H. F. Werner. Lecture Hall, Kirstenbosch.

Saturday, September 2nd, at 3 *p.m.*
Talk with Demonstrations on Succulent Plants by Mr. H. Hall. The Nursery, Kirstenbosch.

Saturday, September 30th, at 11 *a.m.*
Meeting at Karoo Garden, Worcester. Talk and Tour of the Garden by Mr. J. Thudichum.

Saturday, October 7th, at 11 *a.m.*
Annual Gathering of Members on the New Lawn, Kirstenbosch. (If wet, in the Lecture Hall.)

MEMBERS! Support the work of the Society by attending these fixtures, and don't forget to pay your subscriptions!

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT, 1949

Your Council has pleasure in presenting the Thirty-Sixth Annual Report of this Society for the year ending December 31st, 1949.

Membership.—During the year 417 New Members were enrolled, which constitutes a record and an increase of 65 over the number enrolled during the year 1948. Resignations and Deaths total 123, whilst 115 Members who were two years overdue with their subscriptions have been struck off the membership roll. The full membership of the Society now stands at 2,321, including 144 Life Members.

Financial.—The sum of £2,115 5s. 2d. represents the Grant to the Trustees of the National Botanic Gardens for Kirstenbosch and the Karoo Garden, Worcester, for the year 1950. This is a total increase of £469 7s. 3d. over the amount granted in 1949, this resulting from the increase in membership and the higher subscription rates which now incorporate the special subscription to the Karoo Garden. The Life Members' Fund at the year end stands at £2,374 19s. 4d., £29 0s. 8d. having been written off this fund against office furnishings.

Bernard Price Bequest.—The Council records with gratitude and appreciation the receipt of £700, being part of the sum of £1,000 bequeathed to the Society by the late Dr. Bernard Price, a much-esteemed Life Member. Dr. Price was a strong supporter of the Botanical Society during his lifetime and it is with deep regret that his passing is recorded.

Election of Office Bearers.—The following Office Bearers for 1949 were elected at the Annual General Meeting held on March 22nd:—

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, the Right Honourable Chief Justice E. F. Watermeyer.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council: Professor R. S. Adamson, Mrs. L. Bolus, Sir Alfred Beit, Col. A. A. Beck, Mr. C. H. Clayton, Miss M. E. Johns, Dr. E. L. Gill, Mr. C. R. Gohl, Mr. G. F. le Sueur, Miss G. J. Lewis, Miss K. Murray, Mr. H. N. Porter, Mr. E. J. Scholtz, Mr. L. A. Solomon, Miss E. L. Stephens, Captain C. Struben, Mr. W. C. West, Captain R. J. du Toit, Mrs. M. R. Levyns, Mr. J. R. du Toit.

Mr. C. J. Sibbett was elected Chairman of the Council at its first Meeting.

Meetings of the Society.—During the year the following Meetings were held:—

February 15th, in the Hugo Naudé Association Hall, Worcester. A Public Meeting was called to stimulate local interest in the Karoo Garden which was attended by approximately 150 people. Mr. J. R. du Toit, who was proposed as Worcester's representative on the Council of the Botanical Society, addressed the Meeting. Professor Compton gave a short survey of the aims and objects of the Botanical Society in its relation to the Karoo Garden. At this Meeting a Worcester Sub-Committee was formed which consisted of the following Members: Mr. J. Thudichum (Chairman), Mrs. O. Symons (Hon. Secretary), Mr. J. R. du Toit, Mrs. P. R. du Toit, Mr. J. E. Krige, Dr. F. Levy, Mrs. E. Traub. On the conclusion of the business of the evening Mr. Lewis Lewis showed a series of interesting and topical films, including a record of the official opening of the Karoo Garden on September 25th, 1948.

March 22nd, at 8.15 p.m., Lecture Hall, Kirstenbosch. Annual General Meeting at which there was a very good attendance. At the conclusion of the business Professor Compton screened colour films of Kirstenbosch flowers.

June 18th, at 3.30 p.m., Lecture Hall, Kirstenbosch. Mr. H. F. Werner gave a talk with demonstrations on ' South African Flowers for your Garden '. An appreciative audience of approximately 50 Members and their friends attended.

September 5th, at 8.15 p.m., Lecture Hall, Kirstenbosch. Mr. K. F. Howes-Howell showed his film, ' Floral Heritage ', and others. Despite a very wet evening there was an attendance of 80.

September 24th, at 11 a.m., Karoo Garden, Worcester. Members met to celebrate the first anniversary of the official opening of the Karoo Garden. The Society was honoured on this occasion by Dr. A. J. Stals, Minister of Health and Social Welfare, and Dr. T. E. Dönges, Minister of the Interior and of Posts and Telegraphs and M.P. for Worcester, who accepted invitations to attend and address the Meeting. Both Ministers in their speeches referred to the great amount of work carried out since the official opening a year before and appealed for nation-wide support of the Garden, emphasising its importance as a national asset. Other distinguished guests included the Mayor and Mayoress of Worcester, and the Deputy-Mayor and Mayoress. Mr. G. F. le Sueur, Miss K. Murray and Miss M. E. Johns represented the Council of the Botanical Society. Mr. J. R. du Toit, Worcester's representative on the Council, presided. It was regretted that owing to absence overseas Mr. Duncan Baxter, Mr. C. J. Sibbett, Professor Compton and other Members of the Council were unable to be present. After the Meeting refreshments were served, followed by a tour of the Garden.

October 8th, at 11 a.m., on the New Lawn, Kirstenbosch. The President of the Society, Mr. W. Duncan Baxter, and the Director of the Gardens, Professor R. H. Compton, addressed the gathering. Professor Compton in his address paid homage to the late Mr. J. W. Mathews, the first Curator of Kirstenbosch, who died on 23rd September, 1949. The pre-war custom of serving tea on the lawn was revived and appeared to be much appreciated by the Members present, who numbered about 60. The Council was happy on this occasion to have the pleasure of meeting many overseas Members who were visiting the Union.

'WILD FLOWERS OF THE CAPE OF GOOD HOPE.'—The Sub-Committee dealing with this book (colour drawings by Mrs. E. Garrett Rice, edited and text written by Professor R. H. Compton) is endeavouring to bring it to the point of publication.

The title has been changed to the above, instead of 'The Wild Flowers of the South-West Cape'.

A gift of £500 towards the cost has been received from a generous donor who desires to remain anonymous.

SOCIETY'S OFFICE AT KIRSTENBOSCH.—This is proving a very great success, and many Members have taken the opportunity to call and get better acquainted with the functions of the Society and the Gardens. Visitors to the Gardens appear to find the information office extremely useful. The success of the office can be judged by the encouraging increase in membership as related elsewhere in this report.

FLOWER SHOWS.—During the year the Society has been represented at various Flower Shows both in the Cape Province and in the Transvaal. These shows have undoubtedly stimulated interest in our indigenous flora and in the work of the Society, many new Members having been enrolled as a result. Special thanks are recorded to all those who so very willingly helped at the shows.

SEED DISTRIBUTION.—During the year 761 Members requested seeds, as a result of which 10,087 packets were dispatched. Reports of very good germination were received, particularly from overseas.

WILD FLOWERS PROTECTION SECTION.—The Annual Report of the Committee is annexed.

OBITUARY.—It is with deep regret that the death of Mr. J. W. Mathews, the first Curator of Kirstenbosch and an Honorary Life Member of the Society, is recorded. Mr. Mathews was responsible for all the practical work in the original layout and development of the Gardens from the beginning in 1913 until his retirement in 1936. He is remembered by many Members for his unfailing helpfulness and by all those associated with him for his ability and devotion to the interests of the Gardens during a period of great difficulty and many problems.

Your Council also regrets to record the deaths of 36 Members of the Society during the year, many of whom had been associated with it since its foundation. Letters of condolence have been sent to all known relatives.

APPRECIATION.—The Council extends to the Cape Provincial Administration sincere thanks for the use of their rooms for meetings during the year. Appreciation is also offered to the Daily Press for their courteous co-operation at all times.

C. J. SIBBETT,
Chairman.

(Mrs.) W. N. HALL,
Hon. Secretary/Treasurer.

Report by the Wild Flowers Protection Section Committee for the Year Ending 31st December, 1949

Two Meetings of the Committee were held during the year.

MEMBERSHIP.—The total membership of the Section now stands at 423. New Members enrolled during the year total 93.

FINANCIAL.—The amount standing to the credit of the Section at December 31st, 1949, was £532 18s. 3d., of which £369 17s. 11d. is represented by Fixed Deposits. Subscriptions received amounted to £114 9s., which shows an increase of £29 13s. over the previous year.

ILLEGAL SALE OF WILD FLOWERS.—Mr. H. D. W. Meyer, the Officer appointed by the Committee to enforce the Wild Flowers Protection Ordinances, has spent a very active year in the cause of wild flower protection. Thanks to his unceasing energy and diligence the following number of offenders against the Ordinances have been brought before the Courts:—

Number of Cases Summons Applied for	213
Including:	
Selling Protected Species	27
Having No Licences	73
Children Under 16 Trading	17
Other Offences	96

Of the above, 166 cases were convicted by the Courts.

These figures show an overall decrease of 4 over the year ending December 31st, 1948.

Two types of offences, namely, allowing children to trade and the hawking of wild flowers from door to door, have given Mr. Meyer much trouble.

The Police Department, owing to shortage of personnel, is as yet unable to spare special Officers to assist the Committee in enforcing the Wild Flowers Protection Ordinances, but in an effort to co-operate more fully this department invited Mr. Meyer to give a series of talks to Police Officers during the year. These talks were well attended and appreciated, and of great value to the Wild Flowers Protection Committee in its work.

WILD FLOWER PROTECTION AND THE PUBLIC.—The Daily Press, to whom sincere thanks are here recorded, have given the Committee and its work much publicity during the year, as a result of which it would appear that the public are becoming more aware of the need for the protection of our flora, and many cases of contraventions against the Ordinances have been brought to the notice of the Committee by conscientious observers.

MEMBERS OF THE COMMITTEE FOR 1949.—The following were elected to serve: Professor R. H. Compton (Chairman), Mr. C. J. Sibbett, Mrs. L. Bolus, Mrs. W. C. West, Dr. E. L. Gill, Mr. C. R. Gohl, Miss K. Murray, Mr. C. H. Clayton, Mr. H. N. Porter, Senator M. J. van Breda, Miss M. E. Johns, Mr. C. St. L. Searle, Mr. W. G. Sheat.

BOOKLET OF PROTECTED WILD FLOWERS.—The Cape Provincial Administration has undertaken to publish a Booklet containing coloured pictures of protected wild flowers for distribution to the Police as well as to the general public. The publication of this work is keenly anticipated by the Committee of the Wild Flowers Protection Section, for it is hoped that this will stimulate interest in, and the preservation of, our wild flora to a great extent.

R. H. COMPTON,
Chairman.

(Mrs.) W. N. HALL,
Hon. Secretary/Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31st DECEMBER, 1949.

		£ s. d.	£ s. d.
Life Membership Fund:			
Balance as at 31/12/48		1,985 0 0	
Received during 1949		419 0 0	
		2,404 0 0	
Less Office Furniture Written-off		29 0 8	
			2,374 19 4
Subscriptions Paid in Advance ..			267 17 8
Dr. Bernard Price Bequest Fund			700 0 0
National Botanic Gardens:			
Surplus for Year			2,115 5 2
			5,458 2 2
Wild Flower Protection Section Fund:			
Balance as at 31/12/48		538 6 11	
Subscriptions received during 1949		114 9 0	
Interest earned during 1949 ..		12 3 8	
		664 19 7	
	£ s. d.		
Less 5% of 1949 Subscriptions credited to General Administration Expenses .	5 13 5		
Salaries re part-time services ..	120 0 0		
Stationery, Printing, Postages, Bank Charges, etc.	6 7 11		
		132 1 4	
			532 18 3
			£5,991 0 5

	£ s. d.	£ s. d.
Cape of Good Hope Savings Bank:		
Deposit with Interest at 3½% p.a. to 31/12/49		713 9 3
Post Office Savings Bank:		
Deposit with Interest at 3% p.a. to 31/12/49		1,057 13 10
United Building Society:		
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/49	502 2 11	
Savings Bank Account with Interest at 2% p.a. to 31/12/49 ..	277 18 0	
		780 0 11
S.A. Permanent Building Society:		
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/49	408 8 9	
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/49	753 1 6	
		1,161 10 3
Cash at Standard Bank of S.A. Limited		1,025 15 6
Miscellaneous Assets:		
Mathews' 'S.A. Plants' Stock in Hand	3 8 0	
Amount due from Wild Flower Protection Section	10 17 1	
		14 5 1
Dr. Bernard Price Bequest — Investment Fund (Fixed Deposit in United Building Society):		
Capital	700 0 0	
Interest at 3½% p.a. to 31/12/49	5 7 4	
		705 7 4
		5,458 2 2
Wild Flower Protection Section:		
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3½% p.a. to 31/12/49	253 18 10	
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3½% p.a. to 31/12/49	115 19 1	
Cash at the Standard Bank of S.A. Limited	173 17 5	
	543 15 4	
Less Amount due to General Account	10 17 1	
		532 18 3
		£5,991 0 5

We have to report that we have examined the above Balance Sheet with the Books and Vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shewn by the books of the Society.

Cape Town.
17th February, 1950.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31st December, 1949.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Expenses		54 6 9	By Subscriptions:—		
„ Honorarium to Secretary and Treasurer		176 13 4	Family Members	419 4 0	
„ Bank Charges		8 10 1	Ordinary Members	1,785 6 4	
„ Stationery, Printing, Duplicating, etc.		102 14 6	Associate Members	218 9 8	2,423 0 0
„ Postages and Receipts ..		24 16 3	„ Donations		42 4 0
„ Gathering at Kirstenbosch ..		2 4 6	„ Interest on Investments ..		113 15 11
„ Journal Part XXXIV (1948): Printing, Dispatching, Postages, etc.	190 10 6		„ Sale of Journals, etc.		20 1 2
Less Received from Advertisements	76 0 0	114 10 6			
„ Surplus for year 1949		2,115 5 2			
		£2,599 1 1			£2,599 1 1

PUBLICATIONS ON SALE AT KIRSTENBOSCH.

The following may be obtained by application, enclosing payment, to The Hon. Secretary, Botanical Society, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

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"A Tip for Horticultural Societies"; Dr. N. R. Smuts	6d.
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		Letters from an Early Cape Botanist.	M. C. Karsten.
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1949 /1950

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*ZIERDAU, F.

THE BOTANICAL SOCIETY OF SOUTH AFRICA.

OBJECTS:

(_a_) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(_b_) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(_c_) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(_d_) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(_e_) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

FOUNDED JUNE 10th, 1913.

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Those wishing to become Members of the Society are invited to communicate with the Hon. Secretary, Mrs. W. N. HALL, Botanical Society of South Africa, Kirstenbosch, Newlands, C.P.

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Edited by R. H. COMPTON
M.A., F.R.S.S.Af., Director of the
NATIONAL BOTANIC GARDENS

Part XXXVI 1950

KIRSTENBOSCH,
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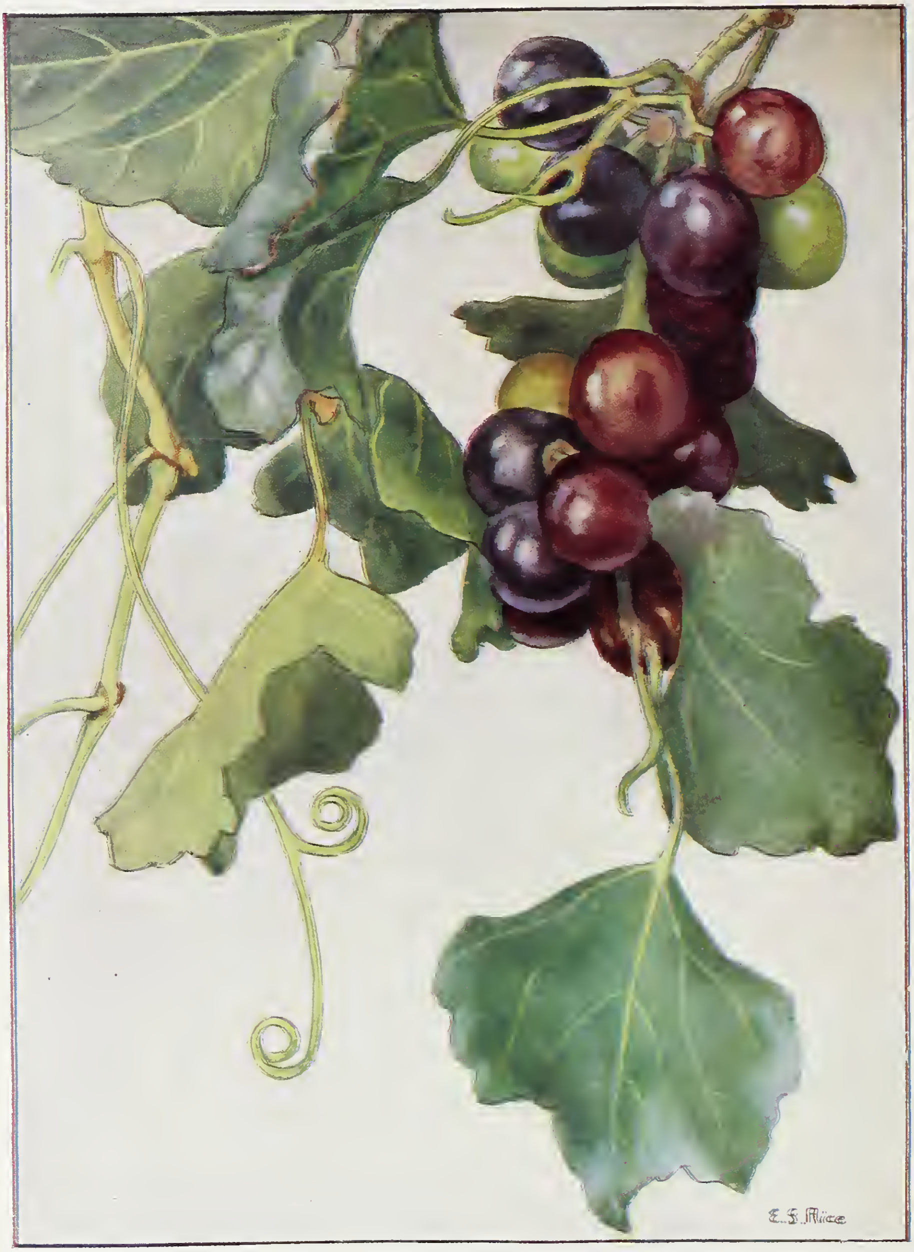

XXIX. ***Rhoicissus capensis.*** *Wild Vine. Monkey Rope, Bosdruif, Baviaanstouw.*

Tall woody climber, occasional in forests of kloofs, reaching tree-tops. Coastal Divisions, extending to Eastern Cape Province, Natal and Swaziland. Flowers, on exposed branches only, January: fruits in June and July, used for table jellies.

Specimen plate for the "*Wild Flowers of the Cape of Good Hope*"

The Journal of the Botanical Society of South Africa

EDITED BY R. H. COMPTON.

PART XXXVI 1950

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News and Notes

THE membership of the Botanical Society has shown a further increase during the past year. A full list of Members was published in the last issue of this Journal: this time the names of those new members who have joined the Society since then are published, considerations of space and expense preventing the printing of a complete list every year.

The growth of the Society since its foundation in 1913 is most noteworthy: not only has it survived two wars and many other vicissitudes, but it has had no real set-back and has increased in strength from modest beginnings to the very satisfactory position it holds to-day. The recent increase in membership fees did not check this growth, and the value of the contributions made by the Society to the work of the National Botanic Gardens was markedly increased as a result. For this all Members of the Society are to be cordially thanked, and the Trustees of the Gardens are to be congratulated on the continued and increasing support which the Society has so loyally given.

The chart on the opposite page shows in graphical form the membership of the Society and the contributions it has made in grants towards the general maintenance funds of the Gardens from its foundation until 1950. In addition to this the Society has given substantial sums for various pieces of capital development at Kirstenbosch and Worcester, these being derived from its Life Members' Fund.

* * * * *

The growth of the Society throws an ever-increasing volume of work on its Secretary, who works single-handed with occasional assistance when necessary. The majority of Members are punctual in paying their subscriptions when due, and it would save a great deal of time, trouble and expense if all Members were similarly considerate. Subscriptions date from 1 January each year, and a general reminder is sent to Members (along with their membership card, seed list, etc.) soon after. May we appeal to Members to respond to this at once, and so save the Secretary all the trouble of sending out subsequent requests.

* * * * *

It may again be noted that, after 20 years' continuous membership of the Society, a Member may become a Life Member for a single payment of £10. Many Members have recently taken advantage of this opportunity. The single payment is only about six years' ordinary membership subscription and saves all future trouble, as well as helping to build up the fund for pieces of development work in the Gardens.

* * * * *

It is much to be regretted that Mrs. O. C. Penfold was compelled, for health reasons, to relinquish the lease of the Kirstenbosch Tea House, which she made so deservedly popular an institution, at the end of 1950. Mrs. Penfold had managed what is a difficult business at a high standard with great success and satisfaction to the public for ten years, and takes the good wishes of everybody into her retirement.

The lease from the beginning of 1951 has been given to Mrs. P. McKechnie, who is well known as a most energetic and capable manager, and in whose hands the continued usefulness and pleasantness of the Kirstenbosch Tea House is assured.

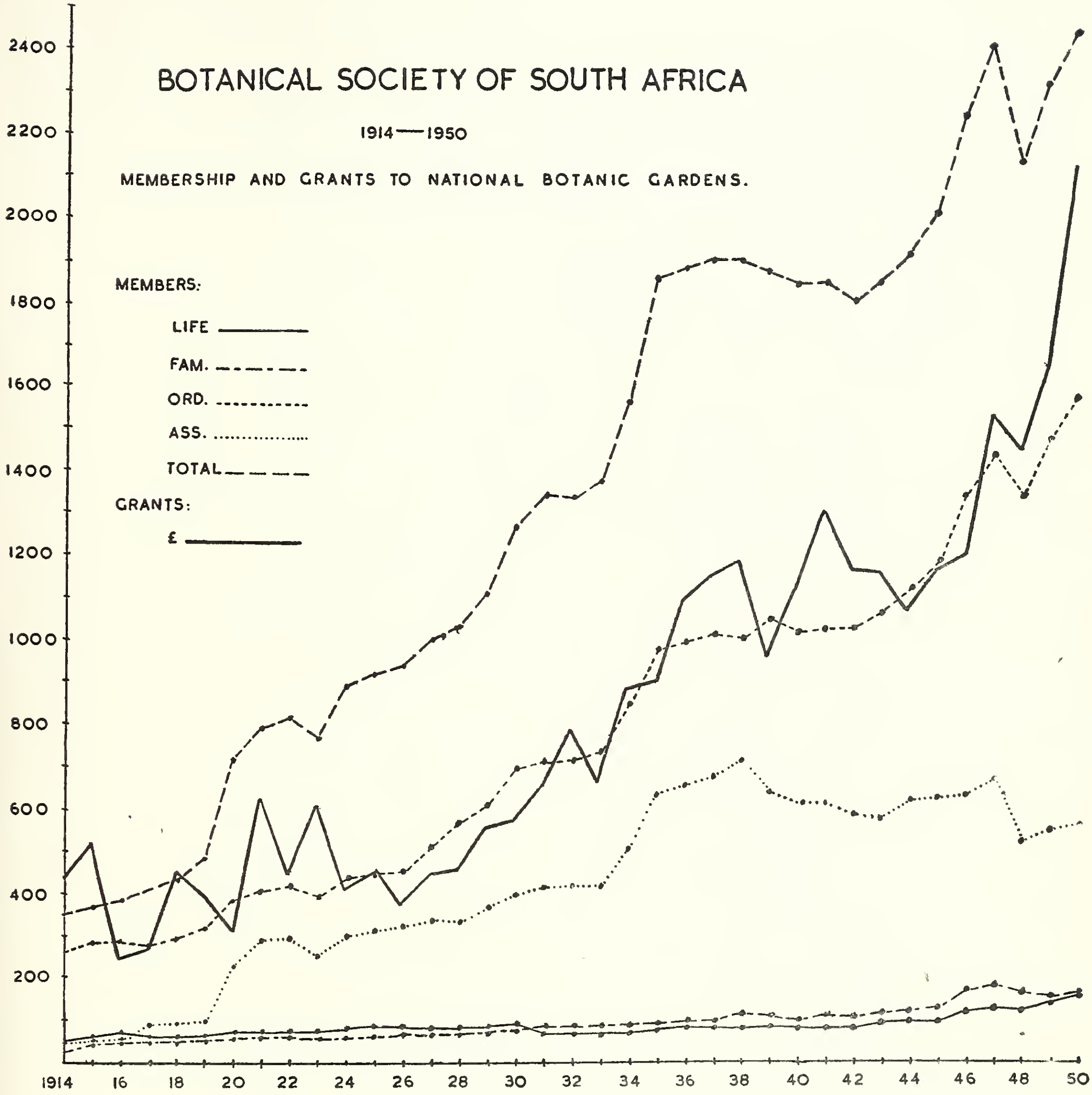
* * * * *

Among the privileges which the Society offers to Members and their friends are the various meetings held during the year. These take the form of lectures, demonstrations, excursions, shows of films and slides, etc., on subjects connected with South African botany and gardening. The attendances at these meetings have been good, as they deserve, and we urge Members to take advantage of the opportunities thus offered. The lectures and displays are given entirely voluntarily, without remuneration: Members can show their appreciation of the services so generously rendered by coming to the meetings and giving the lecturers and the Society the encouragement of their presence and interest.

The Society's annual programme is printed on the Membership Card. *Please diarize the fixtures,* as it is not possible to send out individual reminders for each meeting.

* * * * *

Visits to private gardens are included in the Programme. Mr. Scholtz invited Members to his garden on 15 September 1951, and next year another Member of the Society is giving the same privilege.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1914—1950
MEMBERSHIP AND GRANTS TO NATIONAL BOTANIC GARDENS.
MEMBERS:
LIFE
FAM.
ORD.
ASS.
TOTAL
GRANTS:
£
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
1914
16
18
20
22
24
26
28
30
32
34
36
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42
44
46
48
50

The Secretary would be most pleased to have other similar offers, as such opportunities are very highly appreciated.

* * * * *

The Botanical Society made the suggestion that the Rock Garden at Kirstenbosch should be dedicated to the memory of J. W. Mathews, the first Curator, who was responsible for its construction. The Trustees acted on this suggestion, and an inscription on one of the large rocks in the Garden was unveiled at the Annual Gathering of Members of the Society on 7 October 1950: Mr. W. Duncan Baxter, Chairman of the Trustees and President of the Botanical Society, performing the ceremony and making a most appropriate and moving speech. Plate IV records the occasion.

* * * * *

Members of the Botanical Society visited the Herbarium at Kirstenbosch on 30 June 1951, and were shown round by Miss W. F. Barker, Senior Botanical Assistant, who gave an account of the functions of the Herbarium and the methods employed in its work. Miss Barker's speech is printed on a later page.

* * * * *

Mr. Bernard Carp, who organized a very successful expedition to the remote and largely unexplored Kaokoveld in July 1951, invited Mr. H. Hall, who is in charge of the Succulents at Kirstenbosch, to accompany him. Mr. Hall was able to bring back most interesting living material, which is being shared between Kirstenbosch and the Karoo Garden, Worcester, as well as a large collection of dried material for the Herbarium and preserved cones of *Welwitschia mirabilis,* which occurs in the Kaokoveld in considerable numbers. An article by Mr. Hall on some aspects of the expedition is included in this Journal. For the accompanying photograph of a Welwitschia with Mr. Hall and Mr. D. H. Woods, we are indebted to Mr. Lawrence G. Green.

* * * * *

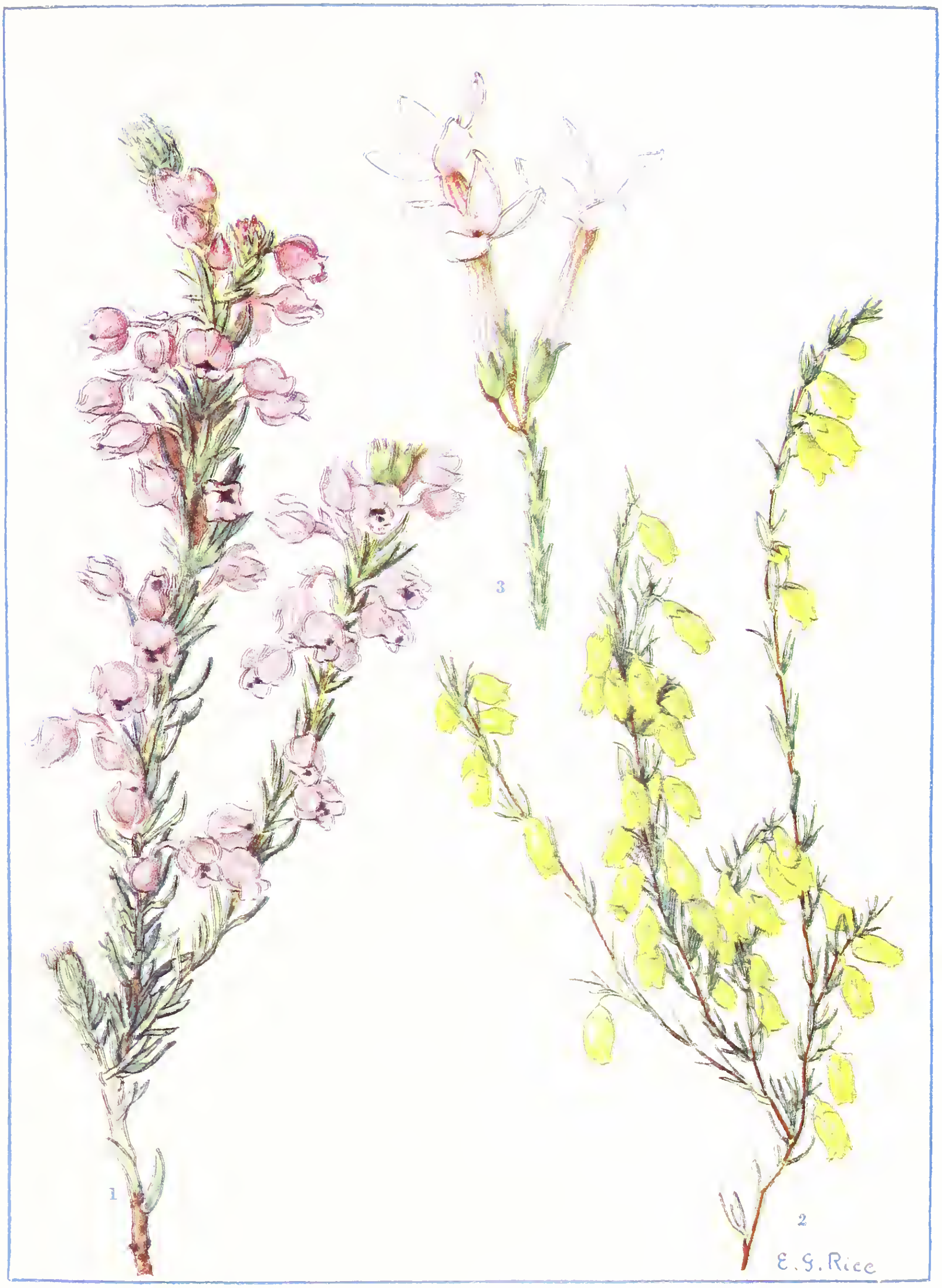
Dr. H. G. Fourcade was a man of great ability and versatility — surveyor, inventor, meteorologist, plant collector and systematist. His chief contribution to the knowledge of South African flora and its distribution was the ' Check List of the Flowering Plants of the Divisions of George, Knysna, Humansdorp and Uniondale ', published as Botanical Survey Memoir No. 20 in 1941. After his early retirement from the Government service he set up in a timber and general business at Witte Els Bosch, in which he prospered. At his death in 1948 he bequeathed a substantial sum to the University of Cape Town for the encouragement of botanical work and the publication of its results. This fund has already given valuable assistance in the publication of important papers on plant systematics in the Journal of South African Botany and elsewhere. Botanical workers have reason to be sincerely grateful for Dr. Fourcade's enlightened action.

* * * * *

So many fine books, elaborately illustrated, on South African biological subjects have been appearing during the last two years that to find a gift for a nature-loving or book-loving friend — or for oneself — is unusually easy. There is one book, however, which will appeal specially to members of the Botanical Society and to all interested in the South African flora, and that is the book which is being sponsored by the Society itself — WILD FLOWERS OF THE CAPE OF GOOD HOPE. This is altogether exceptional in containing no less than 250 full-page plates in colour, reproduced from the drawings which Mrs. E. Garrett Rice has made specially for the purpose, and representing examples of wild flowers growing within a radius of one hundred miles from Cape Town. Each drawing has been made direct from a living specimen and the great majority are drawn to natural size. Captions are provided giving particulars of the plants not shown by the pictures themselves — scientific name, popular name, habit, stature, distribution, habitat, flowering period, etc. There is an explanatory introduction and two indexes. The Foreword is by General Smuts, and was written very shortly before his death.

* * * * *

WILD FLOWERS OF THE CAPE OF GOOD HOPE will be on sale at £2 10*s*. — for the standard edition — an extremely low price for so elaborate and beautifully produced a book. The Publication Committee has been determined to keep the price as low as possible in order to ensure the widest distribution of the book, which it believes will serve a most useful and educational purpose in fostering the realization of the beauty and interest of our wild flowers, and will encourage the demand for their more efficient protection.



XC. (1) ***Erica excavata.***
Caledon, Bredasdorp, rare. Sept. Oct.

(2) ***Erica campanulata.*** *Yellow Bell Heath, Bot River Heath*
Swampy places. Stellenbosch, Caledon. Aug. Oct.

(3) ***Erica jasminiflora.***
Hills, rare. Caledon. Nov. Feb.

Specimen plate for the "*Wild Flowers of the Cape of Good Hope*"

Some idea of the book can be obtained from the two specimen plates which are included in this issue of the Journal. It will be realized that it will not only be a beautiful possession, but will have a special value as Africana. The *de luxe* edition, leather bound, signed by artist and author, and limited to 500 copies, is priced at £6 6*s*. — and has been almost entirely taken up by subscribers and booksellers.

An order form for WILD FLOWERS OF THE CAPE OF GOOD HOPE is enclosed with this Journal. Members of the Botanical Society are urged to send in their orders promptly to Messrs. Juta & Co., 112 Adderley Street, Cape Town, or to Messrs. W. G. Foyle, 12-14 Church Street, Cape Town, or to Pilgrim Booksellers, 59 St. George's Street, Cape Town, who have undertaken to have stocks of the book, or to their own usual booksellers. Copies will also be on sale for cash at the office of the Botanical Society at Kirstenbosch. Publication is expected before Christmas 1951.

* * * * *

The occasion of the Tercentenary of the landing of Van Riebeeck is being marked by a number of books, among which two will be of special interest to Members of the Botanical Society. Prospectuses of these books are enclosed with this Journal, and give full particulars.

One is Miss Mia Karsten's account of *The Old Company's Garden at the Cape*, which records the early history of the settlement and the attempts at introduction and cultivation of useful plants, and also the establishment of what later became the Cape Town Public Gardens. Miss Karsten is known to readers of the *Journal of the Botanical Society* and the *Journal of South African Botany* for her researches into the early botanical history of the Cape.

The other work is Dr. Carl Lückhoff's *Table Mountain, our National Heritage after Three Hundred Years*. This deals with many aspects of the mountain, and in particular the flora is given prominence and is the subject of several admirable illustrations. The publication is specially appropriate in view of the recent investigation by the Government's Table Mountain Preservation Committee.

The Editor of this Journal has been privileged to read both books prior to publication, and can cordially recommend them to Members of the Botanical Society.

* * * * *

Dr. C. Lückhoff is also responsible for a book on the Stapelieae, which will be complementary to White and Sloane's monograph, and which will include five colour plates and 256 plates in black and white, as well as botanical notes on all the genera and keys to all the genera and species. Dr. Lückhoff and his father, Dr. J. Lückhoff, are well known as collectors and students of the Stapelieae and other succulents, and have specialized in the photography of the group. The photographs are being reproduced on the Continent to the best standards, and the book will be awaited with much interest.

* * * * *

The Committee of the General Smuts Birthday Fund decided to devote the greater part of the money collected to the establishment of a Fellowship for research work in South African botanical subjects. The fund is to be administered by a committee representing the National Botanic Gardens and the University of Cape Town, and the Fellow will conduct his work at Kirstenbosch and/or the University. While the Fellowship will be specially for work in plant systematics and geographical distribution of the South African flora, these being the aspects in which General Smuts was most keenly interested, other branches of botanical science are not excluded. It is expected that the first award of the Fellowship will be made for 1953-4.

* * * * *

Dr. N. R. Smuts writes: 'It might interest you to know something of the Southern Suburbs Show Saturday before last, and of the T.H.S. Show. At both The Wilds put on a truly lovely exhibit covering about nine feet of table. Among the items they showed were various compositae and vygies, *Polygala virgata*, Virgilia, Watsonias, Dierama, Proteas (3), *Limonium roseum*, *Erythrina acanthocarpa*, heaths (though most are out of season there were *viridipurpurea*, *peziza*, *vestita*, *regia*, *pinea*, *cerinthoides*, *formosa*, *speciosa*), *Aloe Marlothii*, Leucodendrons, Tritonias, Kniphofia, white chinks, Hypericum, and others I can't think of now. Individual exhibitors were more than at previous shows, and a pleasing thing was the increase in the small exhibitors. Amongst those exhibits were the same items as from The Wilds plus Strelitzia, Barberton Daisies, Sparaxis, other Aloes, *Greyia Sutherlandii*, *Erica grandiflora*, Haemanthus, *Ferraria undulata*, *Streptocarpus Reynoldsii*, lots of succulents, Sutera, Cyrtanthus, Leucospermum (Mrs. Peschel had a magnificent bowl of *L. reflexum* — she has picked 618 heads off one six-year-old bush this year!), a good variety of Watsonias, several different Kniphofias, *Scilla natalensis,* Crinums, Moreas, Ixias and so on — a goodly variety, in fact, which collectively formed no small part of the whole of both shows — and the visitors to the show took more interest in the indigenous stuff than the roses, carnations, etc., magnificent though those were. It really looks as though the snowball is growing, and I think our wild-flower sections have certainly come to stay at our Johannesburg shows.'

* * * * *

Captain T. M. Salter writes:

'Few people would realize that, owing to the speed of the present-day air mail, it is possible for seeds gathered at Kirstenbosch on a Friday morning to produce virtually growing plants in England by the following Tuesday, four days later. In 1949 the Department of Genetics at Cambridge University asked for some seeds of South African Oxalis for experimental work. Now the seeds of Oxalis are of two kinds, one the slow-germinating, small, rough, brown seeds containing endosperm and the other, those of more than half of the species, are comparatively large, quick-germinating, soft, green seeds, entirely without endosperm. These latter will, if moistened, open their cotyledons and commence to grow almost immediately after they are gathered, but they are highly perishable and lose their power of germination in a few days.

'It was found that germination in the first kind sent was very unsatisfactory, and although it had previously been considered impossible to get the perishable kind to England sufficiently quickly, an attempt was made. By careful timing it was possible to collect seeds of four of these species, *O. pardalis, O. ciliaris, O. cuneata* and *O. Massoniana,* just in time to catch the Saturday afternoon air-mail on 10 June 1949. The recipients at Cambridge had been warned that, on receipt, the seeds must be placed on damp soil immediately they arrived.

'The acknowledgement was as follows: "Your parcel arrived on the 13th June (Tuesday). All the seeds, except *pardalis,* looked in good condition and showed signs of germinating within a few hours of sowing. To-day (14th June) they are all, including *pardalis,* well away. These non-endospermous seeds germinate with amazing rapidity."'

* * * * *

Miss M. E. Johns writes:

'*The Reptiles and Amphibians of Southern Africa,* by Walter Rose (published by Maskew Miller, Ltd., Cape Town), is a book which can be recommended to everyone interested in the Natural History of South Africa. All schools and Training Colleges should have as many copies as they can afford.

'Young and old will enjoy it and those specially interested in the flora of our country will find it a wealth of information about many creatures which play an important part in preserving the balance of nature on the veld and in our gardens by including certain plant-destroying creatures in their diet. Identification of these plant allies is made easy by the extremely good photographs in this book.

'The title of the book should not deter one; let the picture of the Zonure lizard "protecting his solar plexus" be your guide to the author's ability to present his subject with wit as well as wisdom.'

The National Botanic Gardens of South Africa

ITS AIMS, FUNCTIONS AND POLICY

THE National Botanic Gardens was established in 1913 by resolution of Parliament, the old farm Kirstenbosch, about 400 acres, Crown land, being reserved in favour of a special Board of Trustees for the purpose. Portion of the adjoining Klassenbosch was added and in 1922 an area of about 700 acres on the slopes above Kirstenbosch and extending to Maclear's Beacon, the summit of Table Mountain, was also put under the control of the Trustees. The whole forms an area of unsurpassed beauty, botanical interest and suitability for the purposes of the institution.

A subsidiary station, the Karoo Garden, specializing in the succulent and other flora of the more arid portions of the Union, was established at Whitehill in 1921, and was transferred to a new site of about seventy-seven acres at Worcester in 1946.

The National Botanic Gardens is under the general control of a Director who is responsible to the Board of Trustees. Each Garden, Kirstenbosch and Worcester, has its curator, responsible to the Director for its gardening development and maintenance. The taxonomic work is in the charge of a senior botanical assistant, and the secretarial, financial and clerical work is in the charge of a secretary; both being responsible to the Director.

The principal source of funds for the Gardens is the Union Government, acting through the Department of Education, Arts and Science. Of the other sources the most substantial is the Botanical Society of South Africa, founded at the same time as the Gardens with the object of giving it general and financial support: this it has done to an increasing degree, and the Society now numbers about 2,400 subscribing members from all parts of the Union and several other countries.

The National Botanic Gardens is concerned primarily with the indigenous plants of South Africa: in this respect it is unique among the large botanic gardens of the world. Its functions are, briefly, the collection, cultivation, display and study of the South African Flora.

I. *The scientific aspect.* The work of the Gardens is based on the science of systematic botany, and one of its chief aims is to add to the scientific knowledge of the South African Flora, its characteristics, relationships and geographical distribution. It endeavours to do this through:

(*a*) *Collecting material from the wild state.* This is done as opportunity offers, and also by means of definite expeditions in which members of the staff and others take part. By this means specimens are obtained in the living state and are also preserved for permanent record and reference. The Gardens, moreover, has correspondents in many parts of the Union who voluntarily contribute material.

(*b*) *Cultivation.* Living material (plants, bulbs, seeds, etc.) is registered and grown under observation, with a view to obtaining fuller knowledge of its life-history, variation, etc.; the plants so obtained are also preserved for reference. If any of these plants appear to be desirable garden subjects they are propagated for display purposes (see below).

(*c*) *Herbarium work.* The Gardens has its own Herbarium in which are preserved specimens collected in the wild state, suitable specimens sent in by correspondents, specimens grown in the Gardens, books, drawings, photographs, etc. The specimens are studied, classified, named and filed systematically, every endeavour being made to build up a permanent and reliable record of the flora and its habits and distribution. In the course of this work gaps in knowledge are filled and new species or genera are discriminated, named, described and illustrated for publication.

The Herbarium deals with numerous requests from the general public for identification of plants and for botanical information. It endeavours to keep the nomenclature and labelling of plants grown in the Gardens accurate and up to date.

Since its establishment in 1940 the Herbarium has built up a collection of over 50,000 mounted sheets permanently filed in cabinets, as well as a large quantity of material awaiting classification and mounting, and numerous duplicates available for distribution to other herbaria. It also possesses a valuable reference library of essential books, card indexes, etc.

(*d*) *Publication.* The Gardens publishes a scientific periodical, the *Journal of South African Botany,* now in its seventeenth year. Each annual volume of four quarterly parts contains about 200 pages of text and illustrations, dealing with South African botanical subjects. Work done in the Gardens is published in this Journal, as well as suitable papers submitted by outside contributors. The Journal is distributed by subscription, and also in exchange for the publications of other botanical institutions: in this way the Gardens acquires many valuable periodicals, some of which are the only copies in the Union.

II. *Cultivation and Display.* This is the aspect of the work of the Gardens which is best known to the general public, both in the Union and in other countries. The flora of South Africa is highly distinctive and includes an unusually large number of species of horticultural value: many of these are already known in gardens, but there are a great many others which are worthy of introduction.

(*a*) *Introduction.* The flora has so far been insufficiently explored, and many plants which may be passed by in the wild state prove to be of considerable beauty and interest when given favourable conditions in gardens. The Gardens has already brought many such plants to the public notice, and expects to introduce many more. The wild plants are collected and propagated, and if promising, they are grown in sufficient quantity to make a display and to yield sufficient seeds, etc., for further propagation and distribution.

(*b*) *Propagation.* This is carried on in the Gardens nurseries, where the methods applicable to each plant are studied, and where knowledge is obtained as to habits of growth, seasons, soil and water requirements, etc.

(*c*) *Display.* Specimens of large subjects such as trees and large shrubs are planted out in adequate space and become part of the permanent structure of the Gardens. Smaller plants, herbaceous perennials, bulbous plants, small shrubs, etc., are planted out in such numbers as are appropriate. Annuals are raised in larger quantities and the display they produce in spring is one of the most celebrated features of the Gardens.

(*d*) *Sections.* Certain parts of Kirstenbosch are permanently devoted to special botanical or ecological groups. The Cycad Garden, the Protea Garden, the Erica Garden, the Streamside Garden, the Dell with its ferns and trees, the Mathews Rock Garden with its succulents, may be mentioned. The rest of the cultivated portion of the Gardens is laid out with grass lawns and decorative beds with a view to landscape and horticultural effect.

An important section is that concerned with the small succulent plants in which South Africa is so rich. These are kept under stricter control in the main nursery. The Karoo Garden at Worcester is devoted to growing these and other succulent plants on a larger scale, for which the climate and soil are more suited than at Kirstenbosch.

Such groups as epiphytic orchids and other shade- and moisture-loving plants are also grown in the nursery, but glasshouse accommodation at present keeps this work within too narrow limits.

(*e*) *Construction.* The development of the main part of the Gardens involves an enormous amount of work in construction of paths, kerbs and gutters, stormwater drainage, terracing, water reservoirs and reticulation, rock work, stream control, bridges, etc.

(*f*) *Public use.* The public is admitted to the Gardens free of charge daily, and great numbers of people visit it throughout the year. Many people of course regard Kirstenbosch as a specially beautiful and pleasant park, and take no special notice of its scientific and horticultural aspects; but for those who are prepared to take an intelligent or aesthetic attitude towards the plants displayed, the Gardens serves two special functions. In the first place it awakens interest and admiration for the plants and flowers that they see, this being of high cultural value; and in the second place, it reveals the extraordinary wealth, beauty and interest of the indigenous flora of South Africa, and so inculcates a deeper respect for and appreciation of this country's vegetation, and consequently a deeper affection for the country itself.

III. *Economic Work.* When the Gardens was founded it was anticipated that it would undertake the introduction and trial of various economic plants, and this was actually done for many years, the reports being submitted to Government. The Department of Agriculture having, however, taken over this work with its much greater resources, it became unnecessary for the Gardens to pursue the matter to any great extent. Kirstenbosch has, nevertheless, introduced certain essential-oil and other economic plants to cultivation in the Union, and in particular it has pioneered the cultivation of Buchu, a plantation of which is maintained and cropped annually.

IV. *Educational Work.* Kirstenbosch is an ideal place for educational work on various grades.

(*a*) *University.* The Gardens is at present closely linked with the University of Cape Town in the person of the Director, who is one of the Professors of Botany in that University. Kirstenbosch is used by botanical students for excursions and is also a constant source of supply of material for practical class-work.

(*b*) *Schools.* Kirstenbosch offers unequalled opportunities for Nature Study in the living plants and animals it contains. The Cape School Board appoints two whole-time teachers of Nature Study whose principal work is at the Gardens: classes of scholars come to Kirstenbosch every day of the school year for instruction, mainly from Cape Peninsula schools, but also from further afield. Thousands of young people are thus introduced to the beauty and interest of South African plants, birds, insects, etc., and are taught to respect and protect them, the value of this being incalculable.

(*c*) *General Public.* No organized scheme of adult education exists at present, and it is greatly to be wished that it were possible to establish a guide-lecturer service in order to enable the adult public to make a more intelligent use of the unique facilities available at Kirstenbosch. The Botanical Society (see below) makes certain efforts in this direction.

V. *Genetics.* It has not so far been possible to establish a system of genetical research in the Gardens, but development on these lines is much to be desired and facilities could readily be provided in ideal conditions. Hybridization and selection of our indigenous plants (Gladiolus, Pelargonium, Gerbera, etc.) has produced results of outstanding importance in the past — in other countries — and the possibilities of further work on other genera are most promising: for this work Kirstenbosch is marked out as the most natural and suitable place.

VI. *Public Relations.* The general public comes in great numbers for enjoyment and recreation, and is given every possible facility consistent with good behaviour. A Tea House serves lunches and light refreshments: well-made paths, seats, shelters, a car park and other amenities are provided in the Gardens.

Closer contact with the Gardens is available through the Botanical Society, the members of which enjoy certain privileges:

(*a*) *Seed Distribution.* Members of the Botanical Society are entitled to receive seeds from Kirstenbosch and Worcester in proportion to their subscriptions, gratis. A Seed List is issued annually from which members can choose. This privilege is greatly appreciated, many thousands of packets of seeds of indigenous plants being thus distributed every year. The result is a great widening of interest in the cultivation of South African plants, both here and in other countries.

(*b*) *Journal of the Botanical Society.* This is published annually and issued free to members: it contains articles on cultivation of South African plants, editorial notes and news, semi-popular articles on botanical subjects, etc.

(*c*) *Meetings, Lectures and Gatherings.* About six meetings are held at Kirstenbosch for the benefit of members and their friends in the course of the year, when lectures and demonstrations are given, and films and slides are shown. These are popular and well attended.

(*d*) *Information Office.* The office of the Botanical Society is at Kirstenbosch, and the Secretary is in attendance to furnish information to members and others on subjects connected with the Gardens.

(*e*) *Wild Flowers Protection.* The Society has a section devoted to the cause of the preservation of the indigenous flora. Members pay a small additional subscription. The section is in close touch with the Cape Provincial Administration on the subject of the Wild Flowers Protection Ordinances. It maintains its own salaried officer to assist the police in the enforcement of these Ordinances.

(*f*) *Publications.* The Society issues occasional leaflets, guides and pamphlets. At present it is sponsoring the publication of an important volume containing 250 coloured plates of Cape Flora entitled *Wild Flowers of the Cape of Good Hope.* This is to be on sale towards the end of the present year.

In addition to the work of the Botanical Society, the Gardens office carries on a considerable amount of correspondence with the public, answering inquiries and giving information and advice on a large variety of botanical and horticultural subjects.

The special relation of the Gardens with the vegetation of the Union leads to close contact with, and assistance of, the work of many other bodies having cognate aims, e.g. the Wild Life Protection Society, the National Veld Trust, the Mountain Club, the Cape and Transvaal Horticultural Societies, and so on. The Gardens is directly represented on the South African Museums Association and the Scientific Advisory Council for National Parks and Nature Reserves.

VII. *Conservation.* The preservation of the vegetation, which is one of the fundamental principles of conservation of natural resources, is one of the matters with which the Gardens is concerned. This function has two aspects:

(*a*) *The Upper Kirstenbosch Nature Reserve.* About 700 acres above the Gardens, on the eastern slopes of Table Mountain and extending to its summit, have been placed under the control of the Trustees for the better protection of the indigenous vegetation. This area, which is an example of Cape scenery and vegetation at its best, is treated, as far as practicable, as a Nature Reserve. That is, efforts are made to prevent and control fires, to eradicate exotic tree-weeds, to prevent flower-picking and other forms of vandalism, and in general to protect the vegetation from alien and destructive influences. The public enjoys free access to this area, just as to Kirstenbosch itself, and the paths through it up the mountain are much used by climbers and walkers.

(*b*) *Propaganda and Co-operation.* Attempts are made to inculcate the ideals of conservation in every possible way, by advocacy of national parks and nature reserves, the protection of flora and fauna, the restriction of veld-burning and other forms of destruction: and co-operation is given to other organizations and individuals having similar aims.

VIII. *Conclusion.* The above is a summary of the principal functions of the National Botanic Gardens as conceived at present. In brief, the general policy of the Gardens is to foster botanical science and the practice of horticulture in South Africa, to encourage public appreciation of and respect for the South African indigenous flora, and to contribute a valuable cultural and educational amenity for the people.

Approved by the Trustees of the National Botanic Gardens,

Kirstenbosch,
August 1951.

R. H. COMPTON,
Director.

A Visit to the Herbarium, Kirstenbosch

(Botanical Society, 30 June 1951)

ADDRESS BY MISS W. F. BARKER

As members of the Botanical Society of South Africa, you are familiar with the work being done in the Gardens, in growing and preserving our indigenous flora, and in the distribution of seeds. Our work in the Herbarium goes hand in hand with it, and this visit to the Herbarium was suggested so that members could see something of the less obvious, but very necessary, scientific work being done at Kirstenbosch. Professor Compton has pointed out several times in the Annual Reports which come with your Botanical Society Journals each year, that Kirstenbosch, as well as being a garden in which you may enjoy the beauties of nature and our flora, is in addition a scientific institution: in this it takes its place among the greatest botanic gardens in the world, such as Kew, New York, Buitenzorg, etc., all of which have their own Herbaria.

It is part of our duty to name and preserve specimens of as many as possible of the plants cultivated at Kirstenbosch and we already have nearly 4,000 specimens in our cabinets, together with a card index which makes reference to them simple.

Our flora is a very rich one and new species are still constantly being discovered, so it is not surprising that undescribed plants turn up among those sent to Kirstenbosch, or are collected by members of the staff. It is another of our duties to name and describe these. This is not quite as simple as it sounds, as before a plant is described the botanist must be reasonably sure that it has not been named before. This may involve a great deal of research and necessitate seeing old type specimens, which are tucked away in the European herbaria, many of which are difficult of access. Sometimes publication is delayed because the botanist feels that the material is insufficient and incomplete. All published species must have authentic type specimens to accompany them, and so before committing himself to print, he prefers to wait until further material is available. When a new species is represented in the Gardens by one specimen only, it is sometimes difficult to decide who shall have it — the gardener in order to propagate more from it, or the botanist to use as a type specimen. When it is of no real horticultural value the botanist may win; but if it is, he may have to wait years before he has accumulated sufficient material for a type. More often still, publication is delayed because the poor professional botanist with all his routine duties and interruptions, just has not got the time to devote to research. Even amateur botanists (and I use the word with all due respect) who are able to concentrate all their energy and enthusiasm on one genus at a time, such as Mr. Reynolds and Captain Salter, have taken nearly twenty years to produce their monographs; so I hope you will bear with us in future if the new plants you may bring to Kirstenbosch are not described and named within a month or two.

There is also a large, uncultivated part of Kirstenbosch, comprising the steep slopes and the mountain as far as Maclear's Beacon, known as the Upper Kirstenbosch Nature Reserve. We have set aside a special section of the Herbarium for plants collected in this wild area, and already have 2,500 specimen sheets from it.

We also name hundreds of specimens sent in during the year by correspondents, and send out reports. Much of the material received is so scrappy and inadequate that it gives us hours of unnecessary work and many headaches, when adequate specimens could be named in a few minutes.

Naming a plant is rather like solving a detective story: you must have the clues in order to unravel the problem, and our clues are provided by good, complete specimens, accompanied by accurate information as to where they were found, their time of flowering and fruiting, size, colour of flowers, etc.

You probably are aware that a Scholarship, known as the Edward Muspratt Solly Scholarship, was endowed by Mrs. Solly in memory of her son, and is available each year to enable a qualified student to work on systematic botany at Kirstenbosch. It began in 1928 and so far sixteen students have taken advantage of the scholarship, and six of them are still actively engaged in scientific work.

That, briefly, is a summary of the work for which the Herbarium is responsible. While we can never attain the eminence of our older sister institutions, we nevertheless hope that, in our modest way, we are adding a useful share to the scientific work being done in the botanical world.

The definition of a herbarium is simply 'A collection of dried plants', or in other words a plant museum, containing a collection of preserved and mounted specimens, arranged according to a definite system: hence the name 'Systematic Botany'.

Modern Systematic Botany dates from the publication of the *Species Plantarum* by the famous Swedish botanist, Linnaeus, in 1753. In it he introduced the binominal system of naming plants, giving them a generic or surname, and a specific or Christian name, putting the generic name first.

Before the discovery of the New World, people in the Old were interested in plants mainly from the medicinal point of view, and the earliest botanical books describing and illustrating them were called Herbals. As exploration advanced seeds and plants were brought back from the Americas, Africa and the East, and people in Europe began to take an interest in cultivating them for their beauty and variety. Famous collections were assembled, mainly in the gardens of princes, noblemen and rich amateurs, who could afford them and who often took an active part in sponsoring expeditions.

By 1753, when the *Species Plantarum* was published, the Cape had already been colonized for more than a hundred years, and many of the plants which had been introduced into cultivation during that time were studied by Linnaeus, either in Holland or Sweden. A great many specimens were sent to him by friends and admirers, the chief among whom was his great contemporary, Thunberg, who spent three years at the Cape and made three interesting journeys into the interior. These have been very ably described by Miss Mia Karsten in several articles published in the *Journal of South African Botany*. This Journal, by the way, is published at Kirstenbosch and has now been running consecutively for over sixteen years, which does great credit to the Gardens, as it is the only regular purely botanical periodical of its kind in South Africa.

Another of Linnaeus's correspondents was Ryk van Tulbagh, one of the best and most enlightened governors the Cape ever had. From these sources Linnaeus built up a valuable herbarium, which still exists to-day though it is more than 200 years old. You probably have heard the famous story of how his widow offered the herbarium for sale, in order to provide dowries for her unmarried daughters. It was finally sold to an Englishman named Sir James Smith, who had it shipped to England. This aroused the indignation of the Swedish people when they got to hear about it, and the story is that the King of Sweden actually sent a ship in pursuit, unsuccessfully. Sir James Smith, Sir Joseph Banks and several others founded the famous Linnean Society and the collection is now its property, and is housed in Burlington House in Piccadilly, London, near the Royal Academy.

Many botanists after Linnaeus attempted to rearrange the families of flowering plants in different ways, which they considered more natural. Of these systems two have come to be most frequently used to-day: that by the German botanists Engler and Prantl is the system used by Dr. Marloth in his books, and has also been adopted for the new Cape Peninsula Flora; the other, by the British botanists Bentham and Hooker, is used by Kew and is also followed by the Bolus Herbarium and ourselves. The cabinet doors are all labelled. In this Herbarium the families are all written in red ink and the genera in black, and the numbers correspond with those in Bentham and Hooker's *Genera Plantarum,* so that the whole is like a huge card index which is easily accessible.

The flora of South Africa is one of the richest in the world, and it would be quite impossible to cultivate all the indigenous species at Kirstenbosch and Worcester. In addition, many require special soils, aspect and climate, and would not succeed here, so in order to fill in the gaps in the Herbarium and build up a satisfactory reference collection, we have to go out and collect material in the wild state. This naturally is one of the chief pleasures in a botanist's life.

There have been botanists, and still are, who work on dried material only, either from force of circumstance or by choice. I have been told of one who would not name anything in the fresh state. We, however, believe that the more a botanist knows about a plant, where and how it grows and varies in the field, the better botanist he or she will be.

Many people imagine that collecting a plant is just a matter of picking a specimen and putting it into a press, but there is a great deal more in it than that. A good botanist selects his material to exhibit as many

Photo: E. Bieber.

Plate III.

Mrs. E. Garrett Rice, G.P.C.
Artist of 'Wild Flowers of the Cape of Good Hope'.

Photo: Cape Argus.

Plate IV.

Dedication of the Rock Garden, Kirstenbosch, to J. W. Mathews, 7 October 1950.
Mr. W. Duncan Baxter (right) and Professor R. H. Compton.

clues as possible, such as leaves, flowers, fruits, bulbs, etc., in order to illustrate the characters of the species and assist in identification, bearing in mind all the time the size of the herbarium sheet or sheets it is to occupy.

No branch of science can be entirely divorced from all the others, and we have to go to the other branches for additional clues. While in the field the botanist takes note of the fact that certain plants grow only in certain places, such as vleis, or on the southern, shady slopes of mountains, or above certain altitudes, and so develops a knowledge of ecology or plant distribution. Then again, certain plants only grow in special soils or on particular rock formations; a good example of this being our famous small succulents, many of which only occur on the white quartz patches of the Karoo and Namaqualand; thus a knowledge of Geology is also important.

In the western region of the Cape in particular, some plants are exceedingly localized, occurring only in certain districts, such as the 'Caledon Blue Bell' or the 'Tulbagh Green Ixia'; or they may occur only on a single peak, or in a certain valley: so locality assumes an important role among our clues, and we realize that the study of Geography is essential.

Having collected adequate material and labelled it with all the details observed in the field, the next step is to press it and make as good a specimen as the material will permit.

There are also many people who think that pressing plants is just a matter of putting them into a press, but when they try, they find that they have usually produced the equivalent of some very good compost. I suspect that that is what happens to a great many specimens which are promised to us but never arrive.

Shrubby material is the easiest to handle, as it does not fade quickly and dries quite soon. Some plants such as Ericas, however, are inclined to drop their leaves, and those are treated with poison as soon as possible in order to prevent this. Succulents, too, are poisoned in order to kill the cells and allow the moisture to escape. If specimens are too long for a sheet (i.e. 17 × 10 inches in this Herbarium), they are folded over if pliable enough, or if not, they are cut into sections which will fit on to the sheet, while bulbs and large flower-heads are split down the centre in order to reduce their bulk. Many plants, on the other hand, are very delicate and easily damaged, especially when the presses are being changed. (This has to be done regularly, and most frequently in the early stages, in order to remove the damp papers and replace them with dry ones, thus accelerating the drying process.) To obviate damage, these delicate plants can be placed between double folders of paper, so that the whole can be moved with the specimens undisturbed inside. It is also a good plan to treat glutinous or sticky plants in the same way, as soon as they are picked, as they will tend to stick to everything with which they come into contact, including loose soil. If plants are firm but have delicate flowers, these flowers, if large enough, can be covered individually with double pieces of paper pinned into position. This is a very good method to use for the flowers of 'Mesembryanthemums' and the 'Composites', whose petals curl as soon as the upper papers are removed and the tension relaxed.

When the plants are dry they are removed from the presses and put into bundles to be sorted and named by the systematists. When identifying pressed specimens with small flowers it is a common practice to soak the flowers to be dissected in hot or boiling water. This makes them pliable and easily managed under the microscope. This, however, cannot be done with all plants, especially those belonging to the families Iridaceae, Liliaceae and Amaryllidaceae, and any others having flowers too delicate for this rough treatment. In such cases, whenever possible, a flower dissection is specially prepared while in the fresh state. The dissected parts are laid out on a piece of moistened gum card, in a way best calculated to show their shape and characters, for comparison later with those of related plants. These laid-out flowers are kept in a separate blotting-book until the parent plants are dry, when the cards are faced with cellophane and eventually mounted with them on the sheet.

When the specimens are named and registered, they are ready to be mounted. This is done by arranging them to the best advantage on special paper, the thickness of which depends on the weight of the specimens. The specimens are then attached to the sheets by narrow strips of gum paper; stout parts may be stitched to the sheets with thick thread. The label, clearly written up with all particulars, is added, and finally the mounted sheets are sorted, put into their correct covers and placed in the cabinets.

When a new species of plant is to be described for the first time, it is necessary to do so in Latin, according to the International Rules of Nomenclature. A fuller description, usually in English, German or French, is often added, and whenever possible an illustration of the plant as well. This practice has been adopted in the *Journal of South African Botany* where most of the new species described are accompanied by line drawings, including magnified dissections. This is the cheapest form of reproduction used to-day, and by making the original drawing twice as large as the finished illustration is to be, a finer line is obtained.

It is also very useful to have coloured illustrations of plants in the herbarium, as it is not possible to judge the 'set' of flowers and leaves from pressed specimens, and such drawings are done as often as material and time will permit. In past years the students and members of the staff, according to their individual talent, have made illustrations of plants which have flowered in the Gardens. Thus we are building up valuable material which will be at the disposal of future monographers.

Plant Collecting in the Kaokoveld

By H. HALL

THE Bernard Carp Expedition to the Kaokoveld, which I was privileged to join, took place during July and August, 1951. The lengthy negotiations for permits, transport arrangements, the organization of food and such things as petrol and spares, the various contacts with the necessary officials at Police Posts, etc., were but some of the 'headaches' Mr. Carp patiently endured to ensure the smooth progress of the venture. Numbering fifteen European personnel, it included several entomologists, a photographer, a prospector and a writer. My own humble ambition was to collect plants and their seeds and any suitable herbarium material for Kirstenbosch. Furthermore, there were a number of skilled workers from several museums who were indispensable for the preservation of zoological material collected. Besides these there were the Natives employed for the numerous camp duties and who were recruited from Native settlements *en route*.

The Expedition started from the Cape one cold, dark morning about 5 a.m. with rain drumming rather dismally on the roof of the truck but the rain was soon left behind us and for the remainder of the time the weather was perfect. The rest of the vehicles, there were six all told, joined us at pre-arranged towns *en route*: Upington, Windhoek, etc. Of the route traversed to the southern boundary of S.W. Africa, of the dreary vastness of the landscape between Upington and Windhoek, and the notoriously dreadful roads which provided their own thrills as the trucks lurched in the sandy ruts, I will not dwell upon here. It was, however, quite an experience and not lightly forgotten. Whenever safe to do so I scanned the passing veld and recognized the low clumps of *Aloe claviflora* which were just pushing out their scarlet flower spikes, and groups of 'Kokerboom', *Aloe dichotoma,* richly covered with bright yellow flowers. Rounded bushes of *Euphorbia spinea* were plentiful and an occasional plant of *Hoodia Currori,* looking rather forlorn, helped to relieve the otherwise monotonous countryside. Much of the southern part of S.W. Africa is semi-desert, of course. By the time the loftier elevation of Windhoek is reached the landscape becomes more broken and the vegetation more plentiful, with grass and thorn bush covering the hills. Around S.W. Africa's capital the hills are dotted with *Aloe rubrolutea* almost as plentifully as *Aloe ferox* on the hills of the eastern Cape.

Heading further north through Okahandja and Otjiwarongo with their vast cattle farms, the grass and bush type vegetation becomes richer still and at Outjo, the last civilized place before one enters the Kaokoveld, we were well into the tropical flora with the well-known 'Mopane' (*Copaifera Mopane*), a most useful tree, everywhere.

The Mopane, together with the more bushy Combretum species, seemed to dominate most of the Kaokoveld we traversed, the latter heavily-laden with dull-red, winged fruits which are an enchanting sight when seen in the lights of the headlamps during night

JUTA'S BOTANICAL BOOKS OF REFERENCE AND BEAUTY

FLORA OF THE CAPE PENINSULA

By R. S. ADAMSON, M.A., D.Sc., and
CAPT. T. M. SALTER, R.N. (Retd.)

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travel. Outjo is the junction for one route to the Etosha Pan to the east, but our route was still north to Kamanjab across partly undulating country but mostly level plain of red Kalahari sand for about one hundred miles. Kamanjab is on the border of the Kaokoveld as defined at the present time, is a Police Post and also boasts a store; there is nothing more there and for miles in all directions one sees nothing but thorn bush and the distant hills.

The Kaokoveld is in the north-west corner of S.W. Africa and covers an area of about 25,000 square miles. It is bordered on the east by Ovamboland and the Kalahari Desert, on the north by the Kunene River which separates Angola from S.W. Africa, and on the west by Skeleton Coast. The vegetation is a tropical one which becomes more apparent as one proceeds further north. It is a region of vast, grass-covered plains, bush- and tree-covered hills and valleys, and with a high central plateau with mountain ranges up to 8,000 feet in height. As the country steps down westward to the sea the vegetation becomes scantier and of a more xerophytic type with fleshy-stemmed shrubs, thorny succulents, the ubiquitous Mopane reduced to bushes except near dry water-courses, until the Namib Desert proper is reached and where the vegetation is almost non-existent except for a few highly-specialized forms. This is due, of course, to the decreasing rainfall from east to west. The Namib, an inhospitable and waterless belt stretching from the Orange River to Angola, is, for all practical purposes, uninhabitable, and varies in width from twenty to eighty miles, narrowing only where the mountain masses thrust towards the sea. The Kaokoveld was more or less surveyed during the German occupation, evidently with the intention to settle it, but it was not under control. At Sesfontein a fort of considerable size was built but it is now rapidly crumbling away and cattle and goats wander through the passages, nibble at the weeds in the parade ground and lie in the shade of its walls. The whole territory is a Native Reserve by Proclamation of 1947 and also a game reserve. It is closed to tourists, prospectors and would-be farmers alike.

From Kamanjab our direction was still northward though the roads now became mere tracks. Throughout the country there are plenty of place names and most are given on maps, but in the main are for the water-holes, their only occupants the wild animals or primitive Natives. As both human and animal life depend for their very existence on these water-holes in the long, dry season, they loom largely into one's sojourn in the territory and the tracks link one to another so that travel is always from one water-hole to the next.

Heading now for Ohopoho we had to cross several river-beds without a trace of water at this season, through glades of Mopane, across enormous plains which were shimmering oceans of golden grass in the bright winter sunlight. Having been advised of the abnormal height of the grass each car's radiator was screened to prevent an accumulation of seeds which could start a conflagration. We were all extremely cautious with matches and sparks from now on. Once, later on, when tramping over a stony, grass-covered plain towards some distant and inviting hills, my companion and I paused for a rest and a cigarette. My companion struck a match, the blazing head promptly flew off and fell to the ground. In an instant fire shot in all directions through the fluffy, silky layer of grass-seeds lying between the rather widely-spaced parent plants, and our prompt and very vigorous stamping only just managed to stop a serious conflagration. Had there been a breeze we should probably have failed. The tall grass between the wheel tracks slowed our progress to about ten m.p.h., for the ever-present menace of rocks and ant-bear holes, or the deep cavity from an elephant's foot made during rains might have serious consequences. Being heavily-laden, some of the trucks did not escape from a few broken springs, all the same. One advantage of keeping in close convoy was that each driver could watch the jolts or sudden swerves of the truck in front and was thus alerted for rocks and holes. Once, when the truck I was travelling in got separated from the one in front I found it advantageous, and quite a pleasant change, to ride on the left front wing for several miles to enable me to scan the left side of the track, for the height of the grass in the middle completely obscured it from the driver.

Ohopoho was reached late one afternoon after a jolting, tiring journey. Here we had to report to the Officer in Charge of Native Affairs (who is the deputy of the Native Commissioner, Ovamboland), the youthful Mr. van Zyl. His charming young wife promptly made an enormous pot of tea for us which was consumed with almost indecent haste, so thirsty were we all. Mrs. van Zyl informed us that they go shopping to Outjo, over a hundred miles away, every month and to collect mail, in the rainy season at more infrequent intervals. Never, she said, had they had so many European visitors at one time at Ohopoho. This remote place is in two-way radio contact with Windhoek and Ondangua. Over the enormous level plain in front of the house herds of Springbok and Zebra roam at will. It is still an emergency aerodrome but the radio pylons and neat stone buildings strike an almost incongruous note in this remote part of the Kaokoveld. Ohopoho is said to be about 3,600 feet above sea-level and is the only place where rainfall records have been kept in the territory. The last few years reveal an average of about 315 mm. but the figures indicate tremendous fluctuations from one year to another. No rain falls in the winter months. It is known that rainfall is often very localized and the broken nature of the ground such that the run-off is rapid, though underground water collects in many places, giving rise to a number of permanent water-holes.

In the vicinity of Ohopoho I found the rare *Aloe Dinteri,* a stemless plant with purplish, faintly-mottled leaves. Its flowers were over but the seeds were none the less valuable for our use. The plants grew in fissures of dark-coloured dolomite and some underneath shrubs, together with a bright green leaved Kalanchoe with orange-yellow flowers. From Ohopoho we planned to strike westwards towards the Skeleton Coast through mountainous country more or less following the course of the Huarusib River. One afternoon, when in a very rugged gorge, we saw about five Rhinoceros far below, feeding on bushes, and a little further on several Giraffe which quickly galloped away with their peculiar, stiff-necked, swinging gait. Small groups of Impala were frequent, an occasional Steenbok darted across the track, Jackals were plentiful everywhere, as also were large herds of Zebra. Large herds of Springbok were plentiful and often a few would remain quite motionless and unafraid, within a stone's throw, watching the strange mechanical procession pass by. Although the spoor of Elephant was everywhere we rarely saw the massive animals, and it was assumed that owing to exceptionally good rains last summer there were small water-holes in the hills and thus they had no need to congregate around the permanent spots. Occasionally, in the more remote ravines, we would glimpse a herd of Hartmann's Mountain Zebra, surely one of the world's most beautiful animals, but they were extremely shy and would swiftly climb out of sight. Amongst the hills there were large numbers of *Pachypodium giganteum,* a thorny succulent, quite leafless at this season, with fleshy trunk dull-purplish in colour. They become fifteen to eighteen feet tall and may be a yard or more thick at the base. The flowers are creamy-white in colour and not unlike a frilled Petunia, situated near their summits, and I spent several days planning how to climb the thorny giants to obtain specimens without becoming a casualty in the process. Another giant of the succulent world, inhabiting the same harsh dolomitic rocks, was *Cissus Kramerianus,* a relative of the Grape. The largest specimen I saw measured about six feet thick at the base, dividing into numerous stems near the summit. Its fleshy leaves and scarlet berries had all fallen. On the driest slopes occurred the thorny *Euphorbia virosa* (*E. Dinteri*) and in the interior develops to an enormous size. It is one of the most venomous of a notoriously poisonous genus.

At Orupembe, an uninhabited region, lions were proved to be around but we made camp here for several days. As this water-hole was small and muddied by the numerous animals we dug our own well lower down the river-bed and obtained only a little clearer fluid for our own use. Here we would listen to the sound of animal hooves clattering over the stones on their nightly trek to the water. The surrounding hills here were more barren of plant life and the rainfall probably very low, for we were now among the last hills before the Namib sand-dunes are reached. On the summits of the hills I gathered a rare Euphorbia, *E. subsalsa,* which forms low, dense bushes heavily armed with thorns, and noticed how the shrubs became more compressed and flat-topped, more succulent, and a decrease in the vegetation generally. An occasional thick-trunked *Moringa ovalifolia* was seen standing out darkly on the hot slopes, together with many types of shrubby trees like Sterculia and Commiphora. On the cool and sheltered side of a steep cliff at about 5,000 feet were various herbaceous plants in flower, including red-flowered Salvias, a yellow-flowered, strong-smelling Osteospermum, and a few clumps of a Sutera species densely covered with pinkish-mauve flowers. In the river-bed by the camp there were numerous clumps of a yellow-flowered parasite sprouting through the gritty bed. A smaller, bluish-flowered species occurred in similar conditions in another river-bed, but it is often difficult to discover which host their roots are preying upon. Many trees bore a red-flowered parasitic

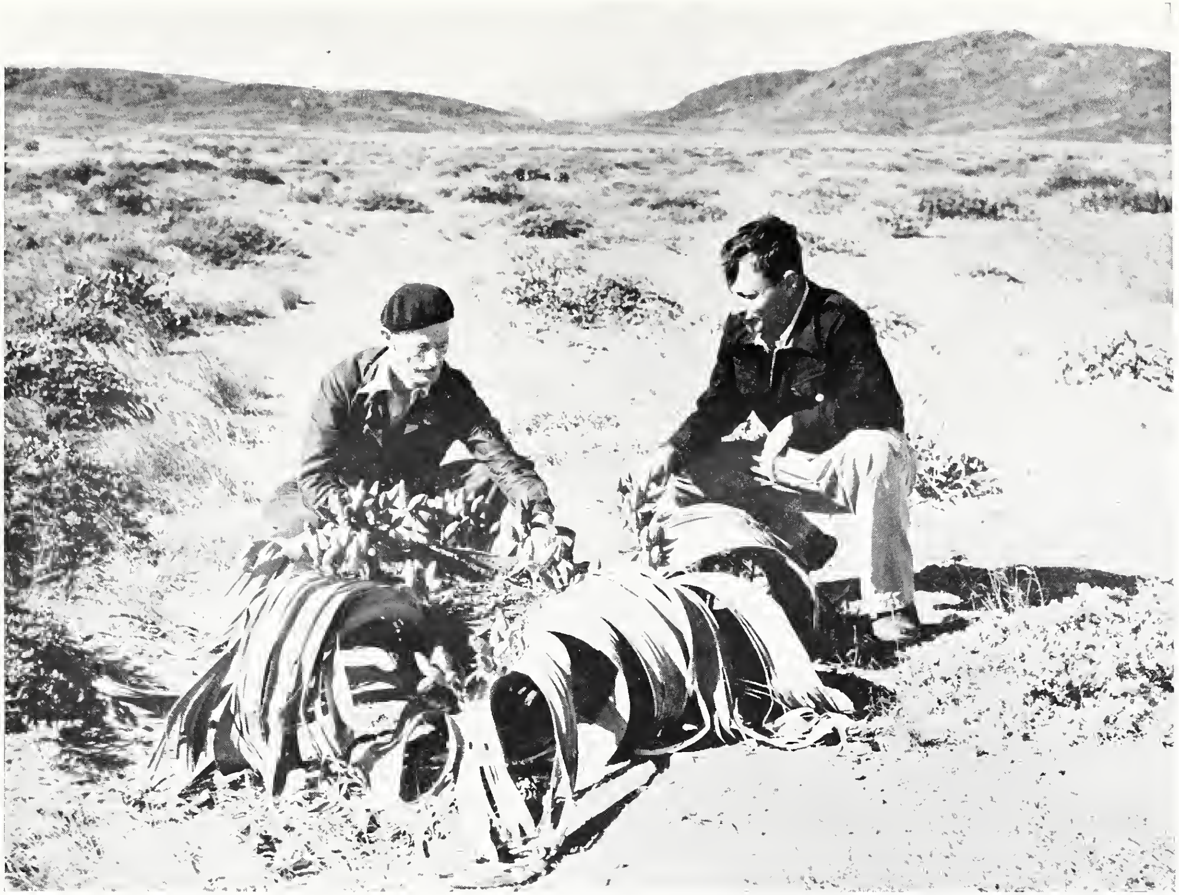

Photo: Lawrence G. Green

Plate V.

Welwitschia mirabilis in the Kaokoveld.

Mr. H. Hall (left) and Mr. D. H. Woods.

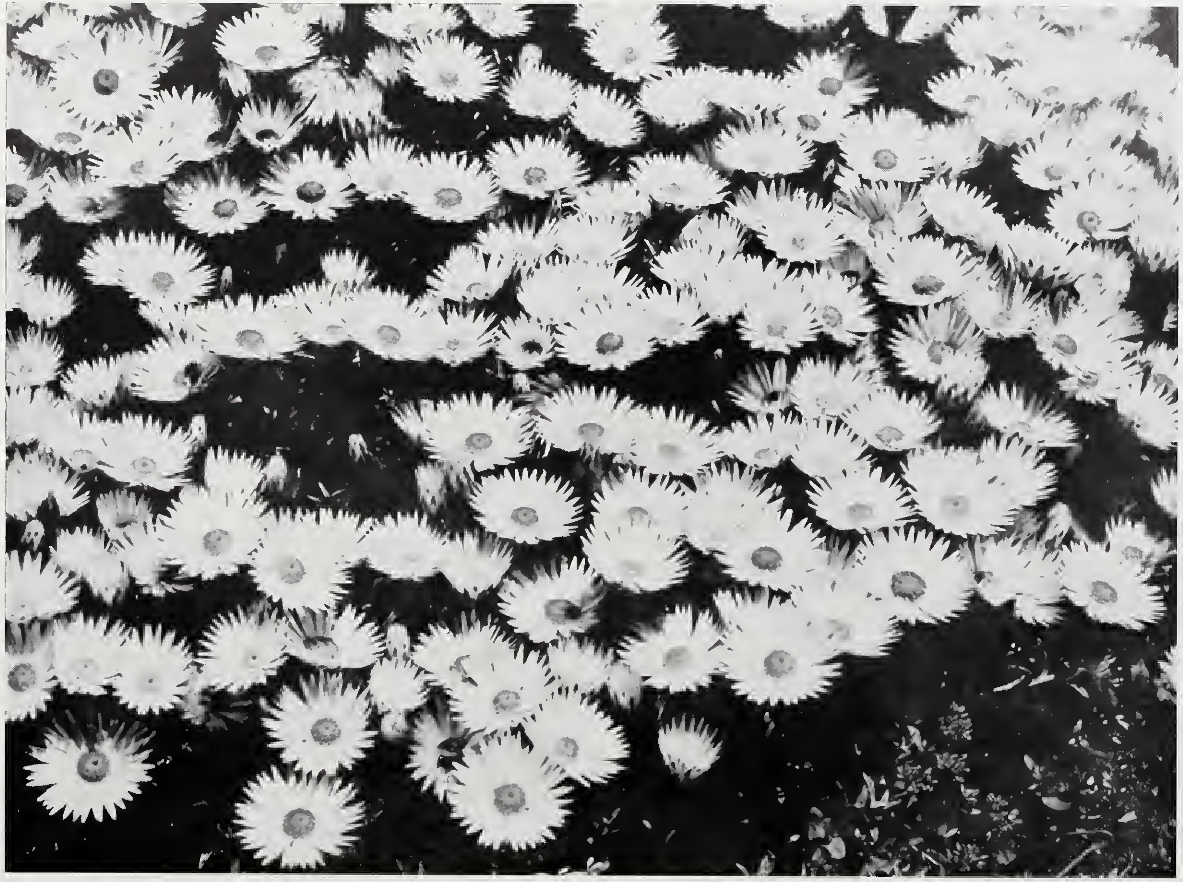

Photo: M. C. Heginbotham.

Plate VI.

Helichrysum retortum, a Cape Everlasting, at Kirstenbosch.

Loranthus on their branches and to the casual glance this might be mistaken for the tree's own blooms.

The large water-holes seemed to occur where a limestone outcrop is formed and only in this kind of soil could I find some quite rare species of succulents. These included members of the Stapelia family such as *Tavaresia grandiflora, Huernia oculata, Stapelia kwebensis* and *S. Schinzii.* The Baobab (*Adansonia digitata*) was often seen, one unique specimen still clothed in bright green leaves for some reason unexplained. At another limestone outcrop I gathered some fine specimens of *Euphorbia Monteiroi* with its long, persistent peduncles forming quite a useful canopy from the burning sun. With these were many Hoodias which were not in flower and their seed-pods wide open and emptied of their contents. Plentiful in numerous places were the huge, thorny, leafless, fleshy bushes of *Sesamothamnus Lugardii* and an occasional specimen would be lying prone, its roots in the air. It would seem that elephants, in playful mood, push them over. I also observed similar examples of this with the Cissus and Pachypodium and, knowing the enormous root-systems of these things, no other cause could be tenable. In some of the valleys near the Namib zone the plant life may form almost impenetrable thickets of Acacia, Commiphora, Acanthaceous bush, etc. Amongst these were six-foot bushes of a Ceraria species, in the leafless stage, like most other things, but so heavily laden with small flowers that, from a distance, it resembled a faint pink cloud.

From Orupembe we made a quick venture to the coast with three trucks, the distance about forty miles, using the dry bed of the Sekumib River for much of the way. Soon we were threading our way through groups of the famous *Welwitschia mirabilis,* probably the most unique of all S.W. African plants. Their two dull-green, strap-like leaves, split into several parts by wind and weather, are the only leaves they ever possess and are unique in being able to grow fresh tissue from their bases. The trunk is barely above ground, becomes hollow in the crown with age and the flowers are borne along the rim where the leaves emerge from the woody bark. Female plants seemed far more numerous than male plants, their respective flowers being quite dissimilar. The plant's concave apex usually contains much debris, old flowers and seeds, constituting ideal homes for insect life, much to the delight of the entomologists who were soon busily at work with forceps and test-tubes. The Welwitschia grew in otherwise barren surroundings in that area though elsewhere they occurred amongst small grass and low bush, some even high up in rocks, somewhat contradicting the belief that they only grow where underground streams are available and to account for their enormously deep tap-root.

On one of the last low hills before descending to the dunes themselves I collected typical Karoo plants including *Lithops Ruschiorum* (possibly the most northern specimens ever gathered), *Trichocaulon Dinteri,* a Hoodia sp., *Euphorbia Juttae, E. Schaeferi, E. virosa* — very dwarfed here — and small bushes of *Euphorbia gregaria* which has probably the largest fruits of all the succulent ' Spurges '. There were the papery-stemmed, inch-tall *Anacampseros Dinteri,* a Sarcocaulon sp. (Bushman's Candle), *Cotyledon orbiculata* which looked little different from the same species which we have on the Cape Peninsula and which extends right across the Cape Province. The interesting *Aloe asperifolia* was there with leaves the texture of fine sandpaper. On the summit of the hill, in crevices of immovable granite rocks, grew the very rare *Echinothamnus Peschuelii* with a swollen, turnip-like stem studded with pencil-like branches and small, glaucous leaves much like some Kleinias. Sharing these very arid conditions were many plants of a small Helichrysum with silvery-grey leaves covered with the softest downy hairs and showy, pinkish-red flowers. Amongst these were a few dwarf Cotulas with golden-yellow flower heads.

With the aid of a Native guide we pushed on through a veritable wilderness of yellow sand-dunes, some of which were as large as mine dumps, pausing now and then to spy out the direction, but only when on a down slope to avoid stalling in the soft, loose sand. On the seaward slope of the dunes grew the curious ' Naras ', *Acanthocicyos horridus,* a leafless, sprawling Melon with surprisingly wicked thorns at the joints. An occasional fleshy-leaved bush (Zygophyllum sp.) grew between the dunes, otherwise it was sheer desert as far as plant life was concerned. Eventually we reached the coast at Rocky Point, the infamous Skeleton Coast quite calm and peaceful, and somewhat hazy with the spray from the rocks. Driftwood was strewn plentifully all along the beaches which made excellent fuel for the camp fires. The notorious coast was not living up to its reputation just then but returned to its usual form the next morning, which dawned to a stiff wind from inland, carrying sand particles with painful velocity. As no purpose would be served by remaining there we retraced our tracks of the previous day but found the wind had obliterated much of them and we had a few anxious moments at times, for visibility was down to about twenty yards for much of the time. The sun was almost obliterated by the whirling sand and I shall long remember the picture of the great dunes being blown away, the plumes of sand being driven high in the air as they were worn away, to be built into another dune elsewhere. Yet there was animal life in them and the entomologists made a rapid haul of rare beetles which spend their lives in these dunes. It was quite fascinating to watch the minute creatures frantically digging themselves back into the dune as they became exposed by the wind. Once more on solid ground after a few spells of concerted heaving when we got stuck, we proceeded back to Ohopoho. From here we worked north to the Kunene River at Swartbooisdrif, where we spent several days exploring up- and downstream. The river was abnormally high for the season and we had no means of crossing it in the time at our disposal. However, as debris was lodged some twelve feet in the trees above the water level it was adequate proof of the tremendous flow in flood times. Spoor of Crocodile and Hippopotamus were plentiful and Mr. Carp wisely dissuaded would-be swimmers from using the main stream. The river banks were lined with giant palms, Hyphaene sp., and their lofty fronds, silhouetted against the blue sky, made an enchanting tropical scene. Enormous specimens of *Acacia albida* were common and covered with pale yellow flowers, and nearly every tree was festooned from top to base with a white-flowered Jasmine. A common shrub or small tree there was a species of Gardenia. In rocky outcrops I gathered the rare *Adenium Boehmianum,* a succulent shrub with pale lilac flowers which are produced in winter when the plants are leafless. *Aloe zebrina* grew under bush and among thickets of trees were plants of a Hoodia nearly six feet in height, and nowhere have I seen any described so tall. Covering many rocky slopes were large numbers of a Vellozia which in the dormant state looks rather like a succulent of some kind. It was easy to picture what they would be like in summer, for their flowers are very showy.

As we moved southwards towards Sesfontein a few days later we saw many plants of the lovely *Aloe hereroensis* and many rocky slopes were dotted by countless plants of *Myrothamnus flabellifolia,* the 'Resurrection Plant', which look quite brown and dead until moisture resurrects them once more. A member of the Expedition informed me that it is sometimes used as an adulterant in tea and imparts a pleasant aroma to the beverage.

At Sesfontein, on the fringe of the Namib, a large Native settlement has turned the once fertile and well-wooded valley into a sea of deep, loose dust with their hordes of cattle and goats. Enormous and flourishing Date Palms, traces of Banana and Papaw, bushes of Cotton and an avenue of gaily-flowering Oleander, all uncared for now, still testify to the industry of its earlier occupants, the Germans. A huge fig tree with a canopy of more than 60 yards provided an ideal camp site and a permanent stream of pure water flowed beneath from one of the six springs. A few miles away, at Warmquelle, a hot spring gushes from the earth, and though it was once conveyed by well-planned aqueducts to a large cultivated area below, it is now utterly neglected by the Natives. We, however, all indulged in most welcome hot baths. The Natives were considerably alarmed by nightly raids on their flocks by lions and we saw many traces of them in the dusty tracks from the surrounding hills. The kraals looked quite picturesque after dark with their ring of small fires to try to ward off the beasts.

Then it was time to shake the dust of the Kaokoveld from our feet and head for home. At Outjo we said farewell to the policeman who had been with us by order of the S.W.A. Administration and who had, I think, thoroughly enjoyed the break from routine. The Expedition was virtually at an end.

I would like to stress, in conclusion, that as it was the winter season and because the area is in the summer-rainfall belt the vegetation was almost entirely dormant. But it was equally obvious that the summer flora, especially in the north-east, must be a very rich one after rains. Ironically, however, it is extremely doubtful whether much progress could be made by normal motor transport, for every river would be impassable and the vast plains would very likely be bogs. Malaria would be another problem and there are no doctors in the Kaokoveld. It is likely to remain, for a very long time to come, a little-known part of Southern Africa.

Kirstenbosch,

September, 1951.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT, 1950

Your Council has pleasure in presenting the Thirty-Seventh Annual Report of this Society for the year ending 31 December 1950.

MEMBERSHIP.—New Members enrolled during the year totalled 445, this constituting a record. Resignations and Deaths totalled 127, while 191 Members who were two years overdue with their subscriptions were struck off the membership roll. The actual net gain to the Society is 127. Total membership of the Society now stands at 2,448, including 155 Life Members.

FINANCIAL.—The Grant to the Trustees of the National Botanic Gardens for Kirstenbosch and the Karoo Garden, Worcester, for the year 1951 amounts to £2,423 16*s.* 7*d.*, being an increase of £308 11*s.* 5*d.* over the Grant for 1950. Subscriptions to the Life Members' Fund during the year amounted to £350. The full total of this fund at the year end stands at £1,534 15*s.* 11*d.* The final payment of £151 11*s.* 5*d.* towards the cost of building the Society's Office, together with £38 12*s.* 0*d.* for office furnishings, was paid out of the Life Members' Fund during the year; a special Grant of £1,000 to the Karoo Garden, Worcester, was also paid out of this fund.

OFFICE BEARERS.—At the Annual General Meeting of the Society held on 27 March the following were elected:

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, the Rt. Hon. Chief Justice E. F. Watermeyer.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council: Professor R. S. Adamson, Sir Alfred Beit, Mrs. F. Bolus, Col. A. A. Beck, Mr. C. H. Clayton, Dr. E. L. Gill, Mr. C. R. Gohl, Miss M. E. Johns, Mrs. M. Kidd, Mrs. M. R. Levyns, Miss G. J. Lewis, Mr. J. E. Linley, Miss K. Murray, Mr. H. Porter, Mr. E. J. Scholtz, Mr. L. A. Solomon, Miss E. L. Stephens, Mr. G. F. le Sueur, Mr. W. C. West, Mr. G. E. Williamson.

Mr. C. J. Sibbett was again elected Chairman of the Council at its first Meeting.

'WILD FLOWERS OF THE CAPE OF GOOD HOPE.'—The final stages towards the publication of this book are now being reached, and actual publication is expected to be not later than November 1951. Judging by the interest shown, and from inquiries so far received, this work promises to be very popular. Advance subscriptions total £4,072 7*s.* 4*d.* In addition, the sum of £834 14*s.* 0*d.* has been received in donations, which, together with interest earned, brings the total amount received to date to £4,999 0*s.* 8*d.* Expenses amounted to £191 7*s.* 2*d.*, leaving a balance of £4,807 13*s.* 6*d.* at the year end. In addition to cash already received, orders from Booksellers amount to approximately £1,270. Substantial Guarantees have also been received, but further Guarantees would be greatly appreciated.

SOCIETY'S OFFICE AT KIRSTENBOSCH.—The success of this office can be assessed by the increasing number of new Members enrolled each year. More and more Members, as well as the usual visitors to the Gardens, are making use of it.

SEED DISTRIBUTION.—The number of packets of seeds distributed to Members during the year was 15,509, representing the requests of 980 Members.

FLOWER SHOWS.—The Society has again been represented at Flower Shows in the Cape Province, the Transvaal, and overseas, where indigenous flowers grown in the Gardens were exhibited. These Shows have been of great material benefit to the Society in its endeavour to interest the general public in the cultivation and preservation of our native flora. To all those who so willingly helped at these Shows, the grateful thanks of the Council are here recorded.

WILD FLOWERS PROTECTION SECTION.—The Annual Report of the Committee is annexed.

PRESERVATION OF TABLE MOUNTAIN.—On 31 January 1950, the Mayor of Cape Town invited the Botanical Society to be represented at a conference on the Fire Menace to Table Mountain. In view of the appointment of the Table Mountain Preservation Committee by the Government, and of the general alarm aroused by the recent fires which had ravaged the mountain, the Joint Mountain and Veld Conservation Committee was formed on 11 February. This consisted of representatives of several societies interested in nature conservation, of which the Botanical Society was one. In addition to the Memorandum submitted by this body to the Table Mountain Preservation Committee, the Botanical Society presented its own Report and recommendations.

INTERNATIONAL BOTANICAL CONGRESS, SWEDEN.—Professor R. S. Adamson represented the Botanical Society at the Seventh International Botanical Congress which was held in Stockholm in July 1950.

JOURNAL OF THE BOTANICAL SOCIETY, PART XXXV, 1949, edited by Professor R. H. Compton, was published during the year and issued to all Members, learned societies, etc.

MEETINGS OF THE SOCIETY.—During the year the following meetings were held:

27 *March,* at 8.15 p.m., Lecture Hall, Kirstenbosch. Annual General Meeting, followed by ' Floral Heritage ' and other cine films shown by Mr. K. F. Howes-Howell.

23 *May,* at 8.15 p.m., Lecture Hall, Kirstenbosch. Miss K. C. Stanford gave a most interesting commentary on colour slides of South African wild flowers which were shown by Mr. Reg. Nicholson.

20 *June,* at 8.15 p.m., Lecture Hall, Kirstenbosch. Mr. H. F. Werner, Curator of Kirstenbosch, gave an illustrated talk entitled ' The Royal Botanic Gardens, Kew '.

2 *September,* at 3 p.m., The Nursery, Kirstenbosch. Mr. H. Hall gave some practical hints on the cultivation of Succulent Plants.

30 *September,* at 3 p.m., Karoo Garden, Worcester. Owing to unseasonable weather this meeting had to be cancelled.

7 *October,* at 11 a.m., New Lawn, Kirstenbosch. Annual Gathering of Members. Dedication of the Rock Garden to the late Mr. J. W. Mathews.

MEMORIAL TO THE LATE MR. J. W. MATHEWS.—A moving little ceremony took place on the day of the Annual Gathering when an inscription in stone was unveiled by Mr. W. Duncan Baxter, President of the Society, to the memory of Mr. J. W. Mathews, the first Curator of Kirstenbosch, who died in 1949. The stone forms part of the Rock Garden which Mr. Mathews built and which is now dedicated to his memory.

OBITUARY.—It is with very sincere regret that your Council records the deaths of twenty-eight Members of the Society during the year. A very grievous loss was sustained in the passing of Field-Marshal the Right Honourable J. C. Smuts, O.M., who had been a Member of the Society since its inception.

THANKS.—Sincere appreciation is recorded by the Council of the Botanical Society to the Cape Provincial Administration for the use of their rooms for meetings during the year. Thanks are also extended to the daily Press for their kindly co-operation in reporting the Society's activities during the year.

C. J. SIBBETT,
Chairman.

(MRS.) W. N. HALL,
Hon. Secretary/Treasurer.

Wild Flowers Protection Section Committee

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1950

Two Meetings of the Committee were held during the year.

Membership.—New Members enrolled to the Section during the year totalled 88. The full membership of the Section is now 508.

Financial.—The amount standing to the credit of the Section at 31 December 1950 was £634 15*s.* 8*d.*, of which £382 16*s.* 10*d.* is represented by Fixed Deposits. Subscriptions received during 1950 amounted to £158 1*s.* 0*d.*, an increase of £43 12*s.* 0*d.* over the previous year.

Provincial Administration Grant.—In appreciation of the work which the Committee is doing for the protection and preservation of our native flora, the Cape Provincial Council has been pleased to grant an Annual Grant-in-Aid of £1 for every £1 collected in subscriptions to the Section during the year, with a maximum of £150. As detailed on the Balance Sheet which is annexed, the first Grant of £114 9*s.* 0*d.* was received during 1950. It is gratifying to note that in accordance with the conditions of the Grant, subscriptions received during 1950 qualify for the maximum £150.

Contravention of the Wild Flowers Protection Ordinances.—Mr. H. D. W. Meyer, the officer appointed by the Wild Flowers Protection Committee to assist the Police in enforcing the Ordinances, has again reported a very active year, the following number of offenders being brought before the Courts between 1 January and 31 December:

Number of Cases Summons Applied for	289
Including:	
Selling Protected Species	48
Having No Licences	96
Children Under 16 Trading	30
Other Offences	115

Of the above, 212 cases were convicted by the Courts, 40 are still pending, whilst 56 were withdrawn. A total of £215 in fines was paid into the courts.

The above figures show an overall increase of 76 in 1949. This increase may in part be due to the fact that Mr. Meyer has been able to devote more time to tracking the offenders during 1950. In appreciation of Mr. Meyer's diligent efforts, the Committee decided unanimously to increase his part-time salary of £120 p.a. to £180 per annum.

Wild Flowers Protection and the Police.—The Committee is most grateful to record that the Police Department have now been able to arrange for their Officers to attend a series of lectures on Wild Flowers Protection at Kirstenbosch. The first of these lectures took place in December when approximately 150 Officers were present.

Wild Flowers Protection and the Public.—At a special meeting of the Committee which was held during the year plans for a Wild Flowers Protection Campaign were discussed. As a result of this meeting leaflets were printed and distributed; the co-operation of the Press was invited and most willingly given on several occasions. One newspaper very kindly donated the front page of its week-end gravure supplement to pictures of Wild Flowers with suitable script. Special thanks are here recorded to the Press for their generous co-operation, and to all the individual members of the general public who have assisted the Committee in its work throughout the year.

Pictures of Protected Wild Flowers.—Good progress was made towards the production of a book of coloured illustrations which is being undertaken by the Cape Provincial Administration. The drawings, which are expected to represent about 120 protected species, are being made from living specimens by Mrs. M. Maytham Kidd.

Members of the Committee for 1950.—The following were elected to serve: Professor R. H. Compton, Mrs. L. Bolus, Mr. C. H. Clayton, Dr. L. Gill, Mr. C. R. Gohl, Miss M. E. Johns, Mr. J. E. Linley, Mr. H. L. Malherbe, Miss K. Murray, Mr. H. N. Porter, Mr. H. B. Rycroft, Mr. C. St. L. Searle, Mr. C. J. Sibbett, Senator M. J. van Breda, Mr. W. C. West.

Professor Compton was again elected Chairman at the first meeting of the Committee.

R. H. Compton,
Chairman.
(Mrs.) W. N. Hall,
Hon. Secretary/Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31 DECEMBER 1950.

		£ s. d.	£ s. d.
Life Membership Fund:			
Balance as at 31/12/49		2,374 19 4	
Received during 1950		350 0 0	
		2,724 19 4	
Less Special Grant to Karoo Garden	1,000 0 0		
Office Furniture written-off ..	38 12 0		
Final Payment *re* Secretary's Office	151 11 5		
		1,190 3 5	
			1,534 15 11
Subscriptions Paid in Advance ..			188 5 10
Dr. Bernard Price Bequest Fund			700 0 0
National Botanical Gardens:			
Surplus for Year			2,423 16 7
			4,846 18 4
Wild Flower Protection Section Fund:			
Balance as at 31/12/49		532 18 3	
Grant from Provincial Administration		114 9 0	
Subscriptions received during 1950		158 1 0	
Interest earned during 1950 ..		12 18 11	
		818 7 2	
Less 5% of 1950 Subscriptions credited to General Administration Expenses .	7 18 0		
Salaries *re* part-time services ..	150 0 0		
Stationery, Printing, Postages, Bank Charges, etc.	25 13 6		
		183 11 6	
			634 15 8
			£5,481 14 0

	£ s. d.	£ s. d.
Cape of Good Hope Savings Bank:		
Deposit with Interest at 3½% p.a. to 31/12/50		738 8 8
Post Office Savings Bank:		
Deposit with Interest at 2½% p.a. to 31/12/50		79 12 5
United Building Society:		
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/50	519 14 5	
Savings Bank Account with Interest at 2% p.a. to 31/12/50	531 10 3	
		1,051 4 8
S.A. Permanent Building Society:		
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/50	422 14 8	
Fixed Deposit for 12 months with Interest at 3½% p.a. to 31/12/50	779 8 8	
		1,202 3 4
Cash at Standard Bank Limited:		
Current Account		1,014 12 8
Miscellaneous Assets:		
Mathews' 'S.A. Plants' Stock on Hand	14 7 6	
Amount due from Wild Flower Protection Section	15 18 0	
		30 15 6
Dr. Bernard Price Bequest — Investment Fund:		
Fixed Deposit for 12 months with the United Building Society with Interest at 3½% p.a. to 31/12/50		730 1 1
		4,846 18 4
Wild Flower Protection Section:		
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3½% p.a. to 31/12/50	262 16 7	
Fixed Deposit for 12 months with the S.A. Permanent Building Society with Interest at 3½% p.a. to 31/12/50	120 0 3	
Cash at Standard Bank of S.A. Limited — Current Account ..	267 16 10	
	650 13 8	
Less Amount due to General Account	15 18 0	
		634 15 8
		£5,481 14 0

We have to report that we have examined the above Balance Sheet with the books and vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shewn by the books of the Society.

22 January 1951.
Cape Town.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31 December 1950.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Expenses		88 15 5	By Subscriptions:		
„ Honorarium to Secretary-Treasurer		200 0 0	Family Members	460 17 2	
„ Bank Charges		10 18 9	Ordinary Members	2,060 13 6	
„ Stationery, Printing, Duplicating, etc.		106 10 6	Associate Members	257 1 6	
„ Postages and Receipts ..		34 9 0			2,778 12 2
„ Journal No. XXXV:			„ Donations		92 12 0
Printing, Dispatching, Postages, etc.	250 11 9		„ Interest on Investments ..		133 8 7
Less Received from Advertisements	79 0 0		„ Sale of Journals, etc.		31 9 3
		171 11 9			
„ Surplus for year 1950		2,423 16 7			
		£3,036 2 0			£3,036 2 0

PUBLICATIONS ON SALE AT KIRSTENBOSCH.

The following may be obtained by application, enclosing payment, to The Hon. Secretary, Botanical Society, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

"Cape Annuals for the Garden"; F. W. Thorns. (Dimorphotheca, Felicia, Ursinia, etc. 1 plate.)	6d.
"Economic Plants at Kirstenbosch"; F. W. Thorns. (Lavender, Mint, Sumach, Pyrethrum, etc. 1 plate.)	6d.
"South African Trees and Shrubs at Kirstenbosch"; F. W. Thorns.	6d.
"Growing Plants from Seeds"; S. G. Fiedler. (How to grow succulents. 2 plates.)	6d.
"The Cultivation of non-succulent South African Plants" (78 pp.); J. W. Mathews. (The only book on the subject: valuable in connection with the Gardens seed-lists.)	2/4
"The Genus Oxalis in South Africa"; T. M. Salter. (355 pages, 10 plates, 73 text-figures.)	35/-
"The Species of Oxalis occurring in the Cape Peninsula and how to distinguish them"; T. M. Salter.	6d.
"General Hints on Raising Indigenous Plants from Seed"; H. F. Werner.	6d.
"The Cultivation of Succulents in South Africa"; H. Hall.	6d.
"The Wilds, Johannesburg"; Miss G. Edwards	6d.
"A Tip for Horticultural Societies"; Dr. N. R. Smuts	6d.
"The Cultivation of Buchu"; H. F. Werner	6d.
The Journal of South African Botany; Vols. I-XVI, each volume in four quarterly parts; per part, 6/6; per volume, 20/-. (To Members of the Botanical Society, 5/- and 15/- respectively.) Continuing.	
Annual Reports of the National Botanic Gardens, 1913-1950, each year	3d.

Reprints available of articles published in the Journal of South African Botany, 6d. each.

JOURNAL OF THE BOTANICAL SOCIETY: BACK NUMBERS.

The following Parts are obtainable at the prices shown. The principal contents are mentioned below: each part also contains full-size Plates, News and Notes, Reports, etc.

Price to Members of the Botanical Society 1/6; to non-Members 2/6:—

Part	VIII.	South African Geraniaceae.	L. Bolus.
		The Cultivation of Geraniaceae.	J. W. Mathews.
		Medicinal and Aromatic Plants in S. Africa.	R. H. Compton.
		South African Heaths.	L. Bolus.
		The Cultivation of Heaths.	J. W. Mathews.
,,	XIII.	Notes on Mesembrianthemum and Allied Genera.	L. Bolus.
		South African Succulents.	J. W. Mathews.
		Alien Trees at Kirstenbosch.	R. S. Adamson.
,,	XIV.	Notes on Gladiolus as represented in S. Africa.	L. Bolus.
		The Cultivation of S. African Gladioli.	J. W. Mathews.
,,	XXI.	Aloe Marlothii: Some Forms and Hybrids.	G. W. Reynolds.
		Lawn Grasses on Trial at Kirstenbosch.	J. W. Mathews.
		How to form a Garden Library.	L. B. Creasey.
		South African Conifers for Garden Use.	J. W. Mathews.
		From New York to Kirstenbosch and Back.	S. V. Coombs.
,,	XXII.	South African Succulents at Kew.	Sir Arthur Hill.
		An Old Cape Frontier.	E. A. Walker.
		Our Wild Flowers and Their Protection.	F. Guthrie.
,,	XXIII.	Economic Plants at Kirstenbosch.	F. W. Thorns.
		Garden Gladioli — Their Origin and History.	L. B. Creasey.
		Growing Plants from Seeds	S. G. Fiedler.
		Letters from an Early Cape Botanist.	M. C. Karsten.
,,	XXIV.	(Silver Jubilee Number.) Kirstenbosch. (Broadcast 9th September, 1938.)	R. H. Compton.
		Nature Study at Kirstenbosch.	M. E. Johns.
,,	XXV.	Buildings at Kirstenbosch.	J. W. Steytler.
		Parks and Publicity.	F. R. Long
,,	XXVI.	The South African Genera of the Haemodoraceae.	W. F. Barker.
		Humus and Soil Fertility.	F. W. Thorns.
		Mountains and Their Vegetation.	R. H. Compton.
,,	XXVII.	Weeds: The "New" Cape Flora.	R. S. Adamson.
		Drug Plants.	F. W. Thorns.
,,	XXVIII.	The Herbarium of the National Botanic Gardens, Kirstenbosch.	R. H. Compton.
		Nature Study in the Forest at Kirstenbosch.	M. E. Johns.
,,	XXIX.	Notes on Some Species of Encephalartos cultivated at Kirstenbosch	M. R. Henderson.
		South African Proteaceae in Cultivation.	F. W. Thorns.
,,	XXX.	Cultivation of Bulbs from the Winter Rainfall Area of the Cape.	F. W. Thorns.
		Report on the Silver Leaf Tree Borer.	F. G. C. Tooke.
		The Magic of the Cycad Forest.	F. Milner.
		Report of the Sub-Committee on Veld Conservation, August, 1944.	
,,	XXXI.	Cape Annuals for the Garden.	F. W. Thorns.
		A Plea for South African Trees.	D. R. D'Ewes.
,,	XXXII.	S.A. Trees and Shrubs at Kirstenbosch.	F. W. Thorns.
,,	XXXIII.	Indigenous Plants.	F. W. Thorns.
		Oxalis in the Cape Peninsula.	T. M. Salter.
		A National Park in the Outeniquas.	R. H. Compton.
,,	XXXIV.	General Hints on Raising Indigenous Plants from Seed.	H. F. Werner.
		The Cultivation of Succulents in South Africa.	H. Hall.
		Speeches at Opening of Karoo Garden, Worcester.	
,,	XXXV.	The Wilds, Johannesburg.	G. Edwards.
		A Tip for Horticultural Societies.	N. R. Smuts.
		The Cultivation of Buchu.	H. F. Werner.

NEW MEMBERS OF THE BOTANICAL SOCIETY
1950

(LIFE MEMBERS: FAMILY MEMBERS: Ordinary Members: *Associates.)*

The star (*) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccuracy in the following list it is requested that notification should be made to the Hon. Secretary, Botanical Society of S.A., Kirstenbosch, Newlands, C.P.

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C.

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(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organise shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members on botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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BOTANICAL SOCIETY

OF SOUTH AFRICA

Edited by R. H. COMPTON
M.A., F.R.S.S.Af., Director of the
NATIONAL BOTANIC GARDENS

Part XXXVII 1951

Attention is
particularly drawn
to the final
paragraph of th
article startin
on p. 10.

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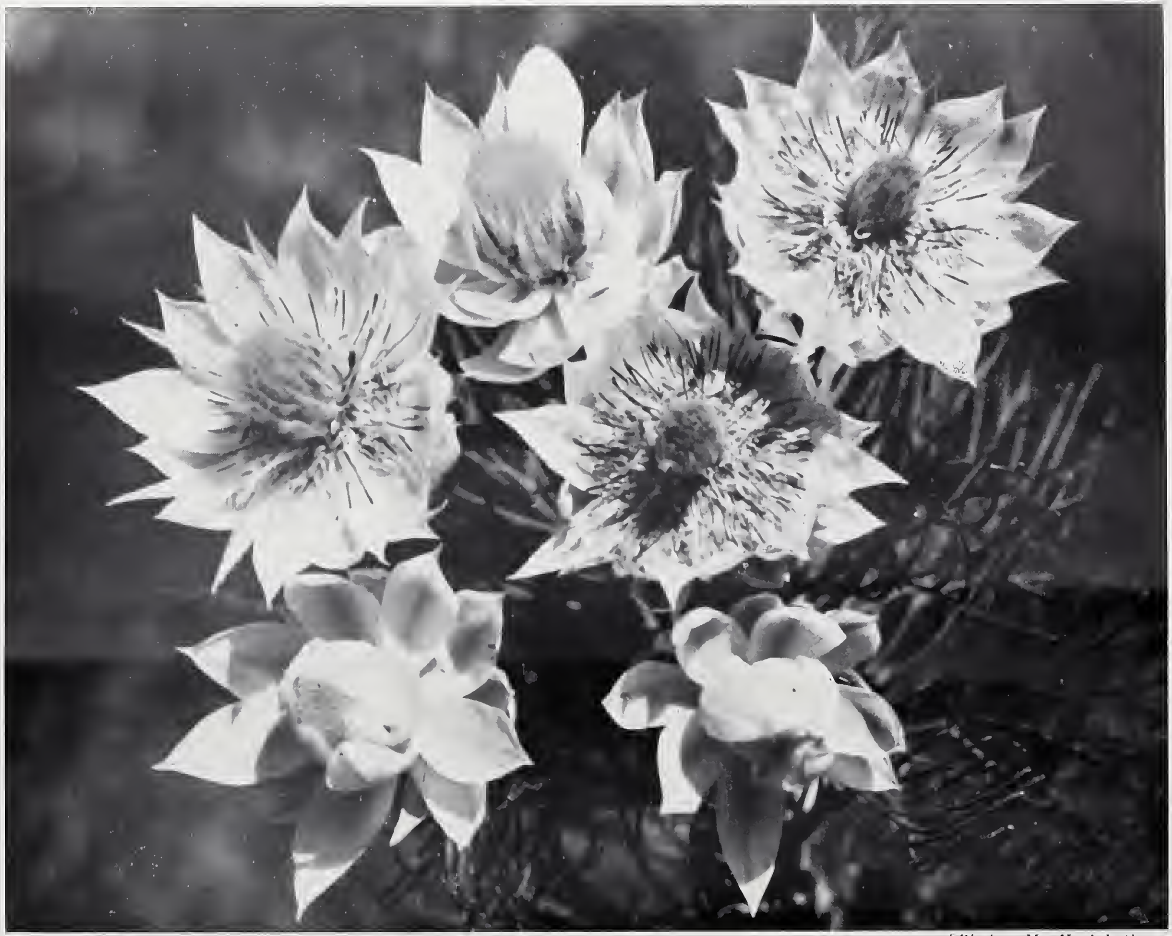

[*Photo*: M. Heginbotham

PLATE I

Serruria florida: 'Blushing Bride'.

The Journal of the Botanical Society of South Africa

EDITED BY R. H. COMPTON.

PART XXXVII 1951

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PLATE 1. Frontispiece. *Serruria florida:* 'Blushing Bride' (Photo: Miss M. C. Heginbotham).

PLATE 2. Van Riebeeck Festival Fair. Cape Provincial Administration's Pavilion. Exhibits staged by The National Botanic Gardens (Photo: Cape Times Ltd.).

PLATE 3. Van Riebeeck Festival Fair. Hall of Science. Exhibits by the National Botanic Gardens, the University of Cape Town Botanical Department, the Division of Botany and Plant Pathology (Department of Agriculture) and others (Photo: Cape Times Ltd.).

News and Notes

THE Editor greatly regrets the late appearance of this issue of the Journal, which has been in part due to illness and other unforeseen circumstances.

* * *

The Botanical Society has arranged a very interesting programme for its Members and their friends for 1952. Those events which have so far taken place—as well as one or two additional ones—have been well attended. The Kirstenbosch Lecture Room has been most useful for evening meetings. To those who have given their time and energy to make these gatherings a success the Society is deeply grateful.

Members can show their appreciation by taking part in the meetings in greater numbers: they will be well rewarded. It is again pointed out that the dates are given on the Membership card, and that it is not practicable to send Members individual notices of the fixtures: the dates should be diarised to avoid disappointing oversights.

* * *

One of the aims of the National Botanic Gardens, in which it has been actively supported by the Botanical Society, has been to introduce some of our outstanding indigenous plants to cultivation. It has done this with the objects of awakening interest in our flora and of preserving species threatened with actual or near extinction. The task of inculcating these ideas has been long and often disheartening, but during the last few years it has been convincingly shown that the cultivation of some of our wild flowers is not only worth while for its own sake, but that it can be highly profitable in the commercial sense. Such plants as *Serruria florida*—almost extinct in the wild state—introduced to cultivation, propagated and distributed by Kirstenbosch—have appeared in large quantities as cut-flowers produced by growers on the commercial scale. The same applies to several other Proteaceae—Proteas and Leucospermums—for the demonstration of whose beauty and possibilities Kirstenbosch is responsible.

This new commercial enterprise is not only a valuable one in itself: it will also have the effect of replacing the flowers so ruthlessly and often illegally plundered from the veld by the products of cultivation and selection, marketed in fresh condition and showing the 'improvements' which garden cultivation can bring about.

* * *

At the same time we should not forget that no admiration which a cultivated flower can evoke is comparable with the delight of seeing their wild prototypes in their natural state.

There is no substitute for Nature Conservation.

Kirstenbosch has worked hard for a third of a century to demonstrate the beauty of our flora; but its work would be only half done if it failed to reinforce the ideal of Conservation. Cultivation and display are good things; but the preservation of our unique flora, as it grows in its natural setting in the mountains, in the vleis, by the seashore, is an overmastering ideal which all who love their country and its living treasures must support and foster.

* * *

The Cape Provincial Administration has recently established a Department of Nature Conservation to act under the various Ordinances—Fisheries, Fauna and Flora—and to provide for their better enforcement, as well as for the general education of the public in the need for the conservation of our wild animal and plant life.

The Director of the new Department is Dr. D. Hey, and he will be assisted by an advisory committee composed in the first place of the directors of the five museums supported by grants from the Cape Provincial Council (Grahamstown, East London, Kingwilliamstown, Port Elizabeth, Kimberley), with co-opted members nominated by the Wild Flower Protection Branch of the Botanical Society and the Western Province Branch of the Wild Life Protection Society.

The five museums can now expect their work to be linked with the Cape Provincial Administration in a more intimate way than has previously existed; and their finances have at the same time been placed on a basis which gives promise of satisfaction which has been sadly lacking in the past. The S.A. Museums Association has played an important part in calling attention to the hardships which the five museums have endured and in bringing about the improvement in their outlook.

At the same time the voluntary and often misunderstood work of the bodies interested in the conservation of flora and fauna now receives official recognition and support. The Botanical Society in particular, through its Wild Flower Protection section, looks forward to added strength and new opportunities of carrying out one of its dearest ideals, the conservation of our incomparable flora.

The Hon. Secretary of the Botanical Society again urgently begs Members not to delay in paying their subscriptions. These are due on 1 January each year, but it often happens that many months elapse before the subscriptions are actually paid. This involves the Hon. Secretary in much unnecessary work and the Society in needless expense in sending out repeated reminders.

A little thoughtfulness and promptness in this respect would save a great deal of trouble and would be very greatly appreciated by a very hard-working officer of the Society.

* * *

The silver tree, *Leucadendron argenteum*, is the most distinctive and lovely of all our Cape trees; it is also one of the most vulnerable. It has succumbed, over a great part of the Cape Peninsula, to the competition of pines, gums, wattles, hakea, squirrels and suburban development. In Kirstenbosch it has been largely protected against these adverse influences, owing to the constant efforts of staff and labour, and has been re-established on areas from which the pines had ousted it. The silver tree is, however, susceptible to one or more diseases which cause a considerable number of deaths every year and which give rise to alarm for its survival even in the absence of alien competition. One of these diseases has been the subject of close investigation for several years by Miss D. L. Olivier, Lecturer in Botany in the University of Cape Town; and we are gratified to be able to publish a preliminary account of her findings in this Part of the Journal.

* * *

Sir Edward Salisbury, Director of the Royal Botanic Gardens, Kew, visited South Africa as one of the distinguished guests of the S.A. Association for the Advancement of Science at its Jubilee Meeting in Cape Town in July 1952. He stayed at Kirstenbosch during part of his time at the Cape and was able to see something of the Gardens; and he also visited the Karoo Garden, Worcester. He was entertained to dinner at the Tea House by the Council of the Botanical Society and gave an illustrated lecture on the Biology of Reproduction in the Lecture Room afterwards. Sir Edward kindly wrote some notes on his visit which we are privileged to publish in the Journal.

* * *

A contributor to this Journal, who insists on concealing his identity under a most inapplicable nom de plume, is impressed by the undoubted fact that the floral treasures of this country are by no means confined to the Cape Peninsula and vicinity. We publish his enthusiastic account of some of his travels in other parts of the Union with great pleasure, knowing that the scope of the National Botanic Gardens covers the whole country, and that members of the Botanical Society are to be found throughout its breadth and length.

* * *

The S.A. Broadcasting Corporation asked for talks on Trees to be given in connection with the tercentenary celebrations. In response to requests, a talk on Three Hundred Years of Trees, delivered on 27 March 1952, is printed in this Journal. The past three hundred years have witnessed destructive exploitation of our tree resources—as of so many others; will the next three hundred years be marked by conservation and reconstruction?

* * *

One of the features of this Journal is the publication of advice on methods of cultivating indigenous plants. No group attracts the home gardener more than the Proteaceae, but the articles previously published on their cultivation, and reprints therefrom, are now out of print, and the Curator of Kirstenbosch, Mr. H. F. Werner, has accordingly contributed a new article on the subject. This will also be available as a reprint.

* * *

The National Botanic Gardens undertook the staging of the 'Flora' section in the Hall of Science at the Van Riebeeck Festival Fair (see Plate 2). The exhibits displayed by Kirstenbosch included big enlargements of photographs of the Gardens, a collection illustrating herbarium methods and a small rock garden of succulent plants. The University of Cape Town Botanical Department set up an exhibit of wood-destroying fungi and photographs and specimens illustrating marine algology. The University of the Witwatersrand sent placards illustrating grassveld research. The Division of Botany and Plant Pathology of the Department of Agriculture exhibited the new Vegetation Map of the Union and a collection of books and periodicals published by the Department.

The Hall of Science was placed at the remote end of one of the long sheds in the exhibition—a curious reflection of the low degree of esteem in which scientific work, fundamental in the development of the Union, was held in the mind of those organizing the exhibition in which the material results of such work were so lavishly displayed.

* * *

The Gardens also took a large part in staging the exhibit in the Cape Provincial Pavilion illustrating the flora of the Cape Province and its protection (see Plate 3). This consisted chiefly of two large rockeries, one displaying succulent plants grown at Kirstenbosch and the Karoo Garden, Worcester, the other non-succulent flora—trees, shrubs, herbaceous and bulbous plants. The construction of these exhibits and the preliminary work of raising the plants displayed, as well as the task of maintaining the exhibit in good condition in difficult conditions during the whole period of the Fair, involved an enormous amount of work; but the result was generally regarded as one of the most attractive features in a Pavilion which was itself of outstanding interest.

* * *

The sales of *Wild Flowers of the Cape of Good Hope* have been very satisfactory, and only a relatively small deficit exists at present. It is gratifying to report that an interest-free loan has been granted by the Department of Education, Arts and Science (National Council for Social Research) to enable the Publication Committee to discharge its debt to the printers. This enables the Committee to release the guarantors from their obligations, and at the same time to express to them their sincere gratitude for the backing they gave to the enterprise, without which nothing could have been achieved. The Committee has every confidence that it will be able to repay the loan during 1953.

* * *

Dr. Carl Luckhoff's recently published book *The Stapelieae of Southern Africa* (Cape Town, A. A. Balkema, £5) contains a magnificent collection of photographs, and a few drawings, illustrating a large proportion of the species of this most curious and fascinating group of succulent plants. The text is taken almost bodily from White and Sloane's *Stapelieae* (with translation into Afrikaans), and many of the photographs were originally published in that fine three-volume monograph. Many of the photographs were contributed by Mr. Herbert Lang. Almost all of the illustrations are magnified, some up to five or even seven diameters, and this reveals details of structure such as are only appreciated by the botanist with his lens; but this makes them spectacular but rather misleading. Emphasis is naturally laid on the flowers, and the vegetative features are somewhat neglected. Details of locality, time of flowering, etc., are omitted. The book will appeal to the collector, to the student of floral structure and to those many others who enjoy beautiful pictures well produced.

* * *

At the Congregation of the University of Cape Town on 27 June 1952 doctorates were conferred upon two botanists to whom we offer congratulations on behalf of the Botanical Society:

To Mr. Gilbert W. Reynolds, who was awarded the degree of Doctor of Science, *honoris causa*, in particular in respect of his work on the South African Aloes.

To Miss G. Joyce Lewis (Keeper of Botany, S.A. Museum, Cape Town), who was awarded the degree of Doctor of Philosophy, on the basis of a thesis on the South African Iridaceae.

* * *

We regret to record the death of the following:

Miss M. E. Dryden Dymond, on 3 June 1952; a gardening apprentice at Kirstenbosch 1927-9, improver 1930-2, gardener on the staff 1932-7, then leaving the Gardens to take up teaching.

Capt. E. J. Scholtz on 24 May 1952; a member of the Council of the Botanical Society and an active supporter of the Gardens; president of the Cape Natural History Club 1949 (see this Journal, Part XXXV, p. 6).

Miss Lilian Britten on New Year's Day 1952; a member of the Botanical Society since 1923; lecturer in Botany at Rhodes University. A correspondent writes: 'First at Rhodes and then in England under Professors Poulton and Oliver and Miss Saunders, she laid the foundation for her wealth of information on every aspect of Botany. She had an unrivalled knowledge of the plants of her own district of Albany but she treasured all our wild flowers quite irrespective of their origin. She took an active part in the formation of the society which established the Grahamstown Nature Reserve. The hundreds of students who passed through her hands and her many other friends will, however, remember her with affection not so much for these things as for her unfailing kindness and her lovely character.'

* * * * *

At the moment of going to press, we learn with great sorrow of the death of Miss K. C. Stanford.

Some Botanical Notes on a Visit to the Cape

By SIR EDWARD SALISBURY

(*Director of The Royal Botanic Gardens, Kew*)

THERE are certain areas of the earth's surface where the flora is especially rich in species and of especial scientific interest and of such the Cape Peninsula is an outstanding example. But no one who has had the opportunity of visiting both the Cape area and south-western Australia could fail to be impressed by the striking resemblance between these floras, resemblances that are expressed not in identity of species or genera or even families, but parallelism in physiognomy of the vegetation and ecological substitution rather than taxonomic affinity. It is this fact that enhances the intrinsic interest of the flora. If south-western Australia has its wealth of Epacridaceae the Cape Province has its abundance of ericas. Both areas alike are the especial home of the Proteaceae but in Australia the banksias and dryandras take the place of the proteas and leucadendrons. Associated with the more arid conditions, the corresponding 'niches' in the plant communities of Australia have in general types with harder, more rigid foliage but the differences are rather of degree than of kind although the Cape flora is characterized by a diversity of succulents that is not found in the Australian flora.

The Cape flora impresses the visiting botanist not only then by its extreme richness but by its great scientific interest alike by reason of the endemic character of the species and their interesting adaptions to the specialized environmental conditions. It is a unique heritage of which the country has every right to be proud. The flora is indeed not only a national, but an international, monument that must be preserved. A study of Professor Adamson's and Captain Salter's *Flora of the Cape Peninsula* shows how many species have either become extinct or very rare and still more are diminishing—moreover species once lost can never be regained. The work carried on at Kirstenbosch to cultivate and preserve the native flora cannot be too highly praised and should receive the support of all those who cherish natural beauty or appreciate the unique scientific value of the Cape flora. But I would also plead for the need of autecological studies of the more characteristic species. Such would not only be of great scientific value but would provide the knowledge requisite for their preservation. The cultivation of native species is not only a means to this end but can afford the opportunity for close study and observation as to the nature of the soil requirements, the time when the seedlings normally germinate, the proportion of their survival, the span of life, and many other features which even those with little technical knowledge or equipment could observe and record; while for those who have more facilities the times of flower initiation, the conditions of pollination, the anatomical organization, the rate and extent of root development and numerous other aspects afford abundant scope. Is it too much to suggest that individual members of the Botanical Society might accept responsibility for recording data for particular wild species to which they have ready access? For by such means a considerable mass of data might be obtained.

The botanical garden affords one means of insurance against loss and it is mainly due to the work at Kirstenbosch that the Blushing Bride, *Serruria florida*, has been saved from extinction and the method of its cultivation established so that its presence in gardens not only safeguards its loss but diminishes the temptation to take it from the wild habitat. The growing practice of cultivating the proteas is also of great value not only for their preservation but as augmenting the number of those who take an interest in the wild flora. Nevertheless, valuable as such cultivation in gardens can be this naturally tends to be restricted to the more spectacular species and the less attractive may easily be neglected, though from aspects other than their appearance they may be equally if not more important.

There are of course those who call themselves practically minded who will ask the question: 'What is the practical value of preserving some inconspicuous plant?' To most members of the Botanical Society it is probably a sufficient answer that their preservation can add to the sum of human knowledge. But for others who demand justification in more concrete forms of utility it may be emphasized that no one can foretell what knowledge is going to be 'useful' in the so-called practical sense and what is not. Who, thirty years ago, could have foretold that a blue mould *Penicillium* would have any practical value or that the study of members of this group of fungi by which one species of *Penicillium* could be distinguished from another would prove of fundamental importance to the saving of many thousands of lives every year? The poisonous plant of to-day regarded merely as a noxious species may to-morrow be hailed as the source of a valuable drug. No one could have foretold that raw products derived from yams and sisal could be converted by the biochemist's skill into a remedy valuable in the relief of rheumatism. So too one day a neglected species which we have saved from extinction may be the source of some prized by-product for the relief of human suffering. But if on purely utilitarian grounds it would be foolish to permit any organism to become wholly extinct it is rather on the general grounds of their contribution to the amenities of life and to the sum of knowledge that we ought to safeguard them from destruction.

Preservation in the natural habitat is far preferable to, though no substitute for, preservation in a botanical or zoological garden. Nevertheless the technique for nature preservation is highly complicated and one concerning which we have all too much to learn. The relation of plants to the insects, fungi and other organisms which prey upon them as predators and parasites is but very incompletely known for most species, and this pattern of life, which constitutes the balance of nature, is the key to successful preservation just as its disturbance can be the cause of devastating pests. The aphorism that nature abhors a vacuum is nowhere more true than with respect to the chain of life. The destruction of any one organism not only changes the pattern in that particular respect but creates a gap in the structure of living things which some other organism will fill that may be a welcome addition or a most unwelcome pest.

My plea is then that no one species should if possible be allowed to become extinct, and that while diminishing species have first priority on botanical gardens, as an insurance against their loss, the study of the biology of the members of your unique flora is essential not merely for their effective preservation but also for the advancement of knowledge.

Three Hundred Years of Trees—Past and Future

By R. H. COMPTON

(*Van Riebeeck Festival Broadcast*)

WHEN Van Riebeeck landed in the Cape three centuries ago, perhaps his most important associate was the gardener Hendrik Boom. The first object of the settlement was to provide health-giving vegetables for the Company's crews making the long voyages between Europe and the East Indies. Boom brought with him the seeds of these vegetables, and in a very real sense may be regarded as the embodiment of the purpose of the settlement and the founder of the industry from which sprang the whole history of the country. Within a few days of landing Boom got to work; he had even had the foresight to bring some of the soil of Holland with him for his seed-beds. His little vegetable patch, buffeted by the winds and floods, struggling to survive in an unknown climate, grew to be the Company's garden; new and more successful cultures were established in Newlands and Rondebosch; vegetables of admirable size and quality were produced in the virgin soil in quantities greater than calling ships could use; an extraordinary number of kinds of vegetables and fruits were introduced in those first years under Van Riebeeck and in the succeeding period of development under Simon van der Stel.

But although the colonists devoted themselves from the first moment to the production of vegetables and shortly after to the raising of stock, it was clear that they intended to live on the country in most other respects. One of their immediate needs was for timber, and soon after their arrival they began to explore the indigenous forests on the eastern side of Table Mountain and at Hout Bay.

The whole aspect of the Peninsula must have been very different in those days. It is strange to us that the colonists seem to have had no eyes for its beauties. The flora must have been of great profusion and loveliness, but it passed without comment; even such an outstanding and bewitching tree as the silver-tree, which was then much more plentiful than it is to-day, was hardly noticed. But the colonists had keen eyes indeed for the fine trees which grew in the sheltered kloofs and generous rainfall of what we now call the 'suburban side' of the mountain. (There were no pines, gums, oaks or poplars in those days.) Roads were run round Devil's Peak to the forests and over Wynberg Hill to Hout Bay, and tree after tree—yellowwood, stinkwood, rooi els, assegai and the rest of them, wherever accessible, began to fall to the woodcutter's axe. Regulations as to replanting were largely ignored and the exploitation of the native timber continued in the Peninsula and gradually spread to every forest in the Cape coastal belt. Particular areas of forest were assigned to concessionaires, whose names, some of them, persist to this day in such place names as Kirstenbosch, Burghersbosch, Klaassenbosch. The destruction these early woodcutters did is still visible in the forests in Skeleton Gorge and many other places.

Timber is of course a prime necessity of civilized existence; and like other resources of the new country—and not this country alone—it was at first exploited without the least regard for the principles of conservation or for the needs of posterity. When we celebrate the progress that South Africa has made during its first three hundred years of European occupation, it is fitting to remember that in some respects it has been a period of savage and ruthless destruction. We have only to think of the appalling and senseless damage that has been done to our indigenous vegetation—damage which is now recoiling on our own heads, but which is still going on as if we were helpless to stop it—or to our unique and amazing fauna, whose almost complete extermination is our lasting shame—to realize that any feelings of smug satisfaction with our progress are completely unjustified in these important respects.

We should say to ourselves—our forbears wreaked destruction wherever they went for those three hundred years. Are we doing any better now? What is going to happen during the next three hundred years? Will it be a period of conservation of what remains and reconstruction of what has been lost? Or are we going on exploiting and destroying until finally we have to clear out of the country we have ruined?

This Tercentenary Year is also regarded as Arbor Year. This means that we should consider what trees mean to us and should take practical steps to care for the trees that we have and plant others with an eye to the future.

South Africa is a country singularly rich in woody plants, but very poor indeed in true forest. This seems to be one of the freaks of geography, because the Union is not in itself unsuitable for tree growth. On the contrary, trees belonging originally to other countries—such as the pines of Europe and North America and the eucalypts of Australia—are able to flourish in certain areas of the Union even better than they do in the countries they come from. It is most remarkable to see the way in which pines and eucalypts grow in the grassveld areas of the Transvaal and Swaziland, where the only indigenous trees are small and slow-growing, or where anything like a woody plant is completely absent. The same applies to certain winter rainfall areas in the Cape.

In such cases it is plain common sense to grow trees as a crop; and the returns from such a crop, though not quite so quick as from mealies and wheat, are quick enough to make it worth while for almost any farmer. The Forest Department has led the way, and progressive farmers, as well as big syndicates, are following: the multiplication of the uses to which timber is put, the enormous increase in its consumption, the alarming prospects of a world shortage as well as a local shortage—these factors are making trees the crop of the future—the quite near future. And provided a proper balance is kept between tree-planting on one hand and the conservation of our indigenous vegetation on the other this seems to be a hopeful and constructive policy of development.

In parenthesis let me say that I believe that the Union Department of Forestry is on the right lines, from the broad point of view of the prosperity of the country, in its balanced policy of planting certain chosen areas with trees and of maintaining and protecting far larger areas of the indigenous vegetation on mountain ranges and coastal sands for the essential purposes of water and soil conservation, upon which, even more than upon timber, our country's welfare depends.

Some people are inclined to resent the idea of treating trees as a crop—implying that they will be felled and utilized as produce when they have reached maturity.

This is illogical, but at the same time it is quite natural for us to feel an affection for a tree which we do not feel for a mealie plant or a cauliflower.

Trees can become a part of our lives and homes in a very real way. We like to think that we have planted them, that they are growing to strength and maturity—and to old age—along with us. When they disappear or succumb to man's urgent need for the room they occupy we are distressed and feel that we have lost friends for which speedways and electric cables cannot compensate. A tree takes so long to reach its full development; its existence means so much in our own history and in the history which it has witnessed; it has survived and bears the marks of so many vicissitudes; it has borne and shed its leaves, flowers and seeds with the regularity of the seasons; it has given shelter and shade to generations maybe of human beings, to walkers, to lovers, to the homeless, to a host of other living creatures—birds, and insects—and to graceful forms of life, ferns, mosses and other shade-loving plants, creating as it were a world of its own; it is natural for us to feel a special affection for a tree which is unlike what we feel for any other object.

To plant a tree is an act of faith and of foresight. We may not ourselves live to see it reach maturity, but when we look at some of the splendid trees that were planted years, perhaps centuries, ago we can feel some satisfaction that perhaps the sapling that we plant to-day may give pleasure to our successors and arouse their gratitude that someone, otherwise perhaps quite forgotten, should have made such a gift.

Trees should be considered an essential part of every real home and every community. Nothing is more distressing than to see, in this sun-smitten country, the shadeless homesteads and farm-buildings, the treeless dorps, suburbs and shanty towns, the hot, glaring canyons that many of our city streets are becoming whose only forests are telephone poles and electric standards, the endless monotonous stretches of our national roads without shelter or escape for picnic or pause. In this age of contrete, tarmac and roofing-iron, trees seem to be the last things the engineers think of—if they think of them at all.

The mistakes of the past are costly or impossible to rectify, but the provision of adequate space for trees as well as for traffic and electric wires should be insisted upon in every new township or suburb; and the care and protection of road-side and street trees should be one of the most important functions of the engineers' department of every local authority. Corporations live longer than individuals; if the individual can be expected to plant trees, how much more should we insist on local authorities doing so.

As for our indigenous trees, the destruction of the last three hundred years has been halted in some areas under the control of the Forest Department. The exploitation of the Knysna forests has practically ceased, and there is some chance that parts of them may slowly regain their former splendour. But in the Karoo river-beds the belts of trees—karee and mimosa—are disappearing fast; wagon-loads of logs come from great distances into every Karoo village for firewood; in the neighbourhood of the villages themselves everything that will burn has long ago been pulled out. The stream-beds are left bare and storms wreak havoc in erosion and donga formation all around and result in the silting-up and bursting of dams. The protection of these trees under the Forest Act is practically a dead letter. If it is argued that the villages cannot do without firewood the answer is that before long they will *have* to do without it as the supplies are approaching exhaustion.

The need is for tree-consciousness. Trees for the service of man; trees for beauty, shelter and shade; trees to soften the climate and mitigate the fierce sunshine; trees as a crop; trees as objects of affection; trees to make pleasanter our daily life; trees to adorn our cities and suburbs; trees as a gift to our posterity; trees to clothe the nakedness of our land. Let us be both sentimental and practical about trees. No country needs trees more than South Africa; but few countries cherish or care for trees less than we do.

It is often necessary for a tree to be destroyed, for one reason or another; let us be sure that the reason is a good one and that the destruction is really a necessity.

If trees could speak—and to some people they do—would they not utter some such prayer as the one I quote:

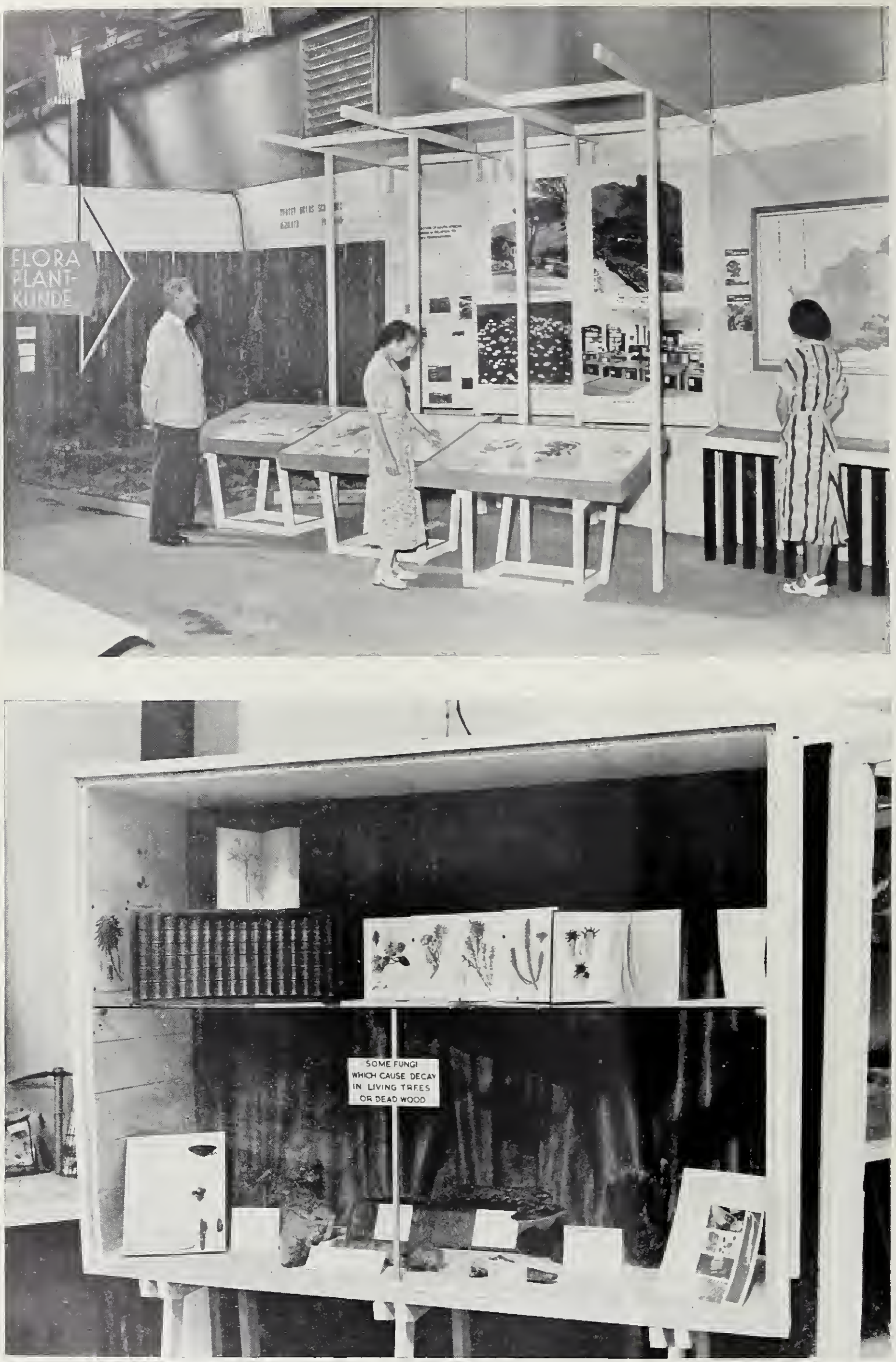
Prayer of the Tree to the Wayfarer

Ye who would pass by and raise your hand against me, hearken ere you harm me.
I am the heat of your hearth on the cold winter nights, the friendly shade screening you from the summer sun;
My fruits are refreshing draughts quenching your thirst as you journey on.
I am the beam that holds your house, the board of your table, the bed on which you lie, and the timber that builds your boat.
I am the handle of your hoe, the door of your homestead, the wood of your cradle and the shell of your coffin.
I am the gift of God and the friend of man.
Ye who pass by listen to my prayer—HURT ME NOT.

[*Photos*: Cape Times Ltd.

PLATE 2

Van Riebeeck Festival Fair. Cape Provincial Administration's Pavilion. Exhibits staged by The National Botanic Gardens.



[*Photos*: Cape Times Ltd.

PLATE 3

Van Riebeeck Festival Fair. Hall of Science. Exhibits by the National Botanic Gardens, the University of Cape Town Botanical Department, the Division of Botany and Plant Pathology (Department of Agriculture) and others.

The 'Hair-roots' in Van Riebeeck's Garden at the Cape

By D. R. D'EWES

WHAT were the mysterious 'hair-roots' mentioned in Van Riebeeck's Journal as the possible cause of the failure of successive plantings of turnips, carrots, groundnuts and similar vegetables in 1652 and 1653?

A note in Miss Mia Karsten's *The Old Company's Garden at the Cape* (Maskew Miller, 1951) records that all the experts consulted by her were baffled. Dr. van der Linde, a noted eel-worm expert, considered that they could not be eel-worm. Other authorities suggested that the 'hair-roots' were either a disease no longer extant, or that the plants were heavily parasitized by eel-worm or some other organism, causing them to put out a mass of hair-roots. Miss Karsten is obviously unhappy about both these explanations.

The simplest explanation of all, and one which I think fits and explains all the facts, is that Van Riebeeck was recording what he actually saw in the soil, and that what he saw was precisely what he said he saw: that is, hair-roots.

The relevant entries in the Journal, as recorded by Miss Karsten, are:

> October 13, 1652: '. . . the cabbage and carrots growing nicely, but the turnips sown in the new rich garden and showing well were destroyed twice, for which we may blame the hair-roots (the soil there being full of them).'
>
> January 29, 1653: '. . . but the cadjangh having fairly sprung up has perished again on account of the sharpness of the hair-root which is still in the ground.'
>
> February 2, 1653: '. . . except carrots, turnips, chervil, onions and parsley of which we have lost much through the sharpness of the hair-roots which we found in the ground.'

Anyone who has dug up virgin veld in the Cape will have been struck by the extraordinary quantity of fibrous hair-roots turned up. This is particularly striking in vlei ground or semi-vlei ground, and anywhere where the Restionaceae abound. This mass of roots is so abundant in some places that it is only with the greatest exertion that the sods can be broken down into any sort of tilth.

From personal experience I know that, until these roots have rotted away, little will grow in the newly turned soil. Seeds will spring up, but since all or most of the available nitrogen is being drawn upon by the soil micro-organisms breaking down the mass of roots, the seedlings cannot maintain themselves, pine for a while, and then succumb to any pest that happens to be present, or perish of starvation.

It is significant that the three references in the Journal all come early in the life of the settlement, and that all suggest that the evil was in newly dug land.

It seems reasonable to suggest that Van Riebeeck, shrewd observer that he was, noted crop failures in land full of these masses of fibrous roots and, living in the pre-chemical era, ascribed to the sharpness of the roots what we would ascribe to the temporary unavailability of nitrogen during decomposition of rather refractory organic material. If we are correct in assuming that the 'new *rich* garden' (my italics) had rich-looking black soil, it is fair to deduce further that the soil was peaty and acid, and that this would aggravate the temporary denitrification. It is, of course, also possible that the newly dug soil had a fairly high count of cut-worms or other ground pests, and that the stunted plants were particularly vulnerable to them, since they had insufficient nitrogen to 'grow away' from the pests.

All this is, I think, valid reason for believing that Van Riebeeck knew what hair-roots looked like, and that when he recorded their presence, we have to take his word for it; although we need not necessarily share his speculations about the precise nature of their effect on vegetable seedlings.

Some Flowers of the Summer-rainfall Area of South Africa

By 'A RABBIT'

WHILE there are no parts of South Africa which have the combined variety and density of wild flowers found in the winter-rainfall area of the south-western Cape, the summer-rainfall area does possess a huge assortment which is not as well known as it deserves to be, and which includes many lovely things which are eminently suited to garden cultivation. Some are available from nurserymen, but the would-be grower of many of them must take the long road of finding them and raising them from seed. But it's a road worth taking.

One's first glimpse of wild flowers growing in a profusion approaching that of the south-western Cape was many years ago in the month of February in the upper foothills of the Drakensberg between Witzieshoek and the Mont-Aux-Sources—what an eye-opener it was. There was a particularly lovely nerine which one would dearly like to have—as far as one recollects, something larger than N. bowdenii, but not as large as N. laticoma or N. flexuosa.

So let's dodge about and have a quick glance at a few bits and pieces.

Approaching the George-Knysna-Tsitsikama area in February over Prince Alfred's Pass—lots of pink Watsonias (? latifolia ? Knysnana). Watsonias of one sort or another occur in profusion in most of this area. The two most attractive species are perhaps the bold orange W. beatricis—lots of them along the George-Wilderness road—and W. galpinii, that dainty chap one sees along the stream beds in most of the area.

At Kruis Vallei, taking the right fork for Knysna, lots of pink heath, which at first glance looks like the common E. floribunda, with its tiny globular flowers, but on closer inspection proves to have curious almost tubular little flowers, and which rejoices in the name of Simocheilus floribunda.

Taking the left-hand fork for Plettenberg Bay, we climb up and down the northern face of Paardekop, and see a showy heath with big heads of tubular, warm red, yellow-tipped flowers—E. densifolia. A couple of miles further on we see E. sessiliflora, with its slightly insipid greenish-yellow flowers growing out from the mealie-cob like bulges on the stem.

Keurbooms River—its peaty water making the ideal setting for blue water-lilies reflected as on a black mirror. Agapanthus poking blue heads out of the bush of the steep banks. Here and there orange krantzes draped with Aloe arborescens.

Over the bridge and on to Keurboomstrand. Plumbago scrambling among shrubs and trees at the roadside. Surely no one can tire of plumbago—but there are only two good ways to grow it—either as a good thick hedge, or else in the former more natural way, which, on the Highveld, has the advantage of giving it some protection from the frost to which it is somewhat tender. A mile or two further on, a grand show of dark red brunsvigias (? Josephinae.) Though they flower for such a short time, brunsvigias are such spectacular things that they look very striking here and there in a rockery or border. They are slow from seed, though not difficult. Follow a stream into any of the many little kloofs, and there's Streptocarpus rexii plastered on moist moss-covered rocks. As for the Keurboom itself, it is gradually coming into its own, but why an attractive quick-growing evergreen tree, covered for six weeks in pink pea flowers, is not found in every garden which will hold a tree, goodness knows—its relatively short life-span (about twenty years) is made up for by the speed with which a replacement reaches a good size. It does well in Johannesburg, but one does not know how it stands more severe frosts. Here and there in the forests one sees Gardenia rothmanii, reaching the size of a small tree—bright shiny leaves, its white flowers spotted brown, with the typical gardenia scent—and curiously enough this species extends up into the eastern Transvaal and even on to the Highveld.

The Hogsback—north of Alice—another 'floriferous' spot—and again it is February. Nearly all the Watsonias are over—mostly pink, but also a rather laxly flowered orange one. Of several species of kniphofia, there are two as the poles apart. Little K. parviflora (its old name of modesta was more appropriate), about twenty inches high, bashfully turning all its flowers away from the sun. K. northii, growing on Gaika's Kop, is quite fantastic, though not very attractive for the garden

—stems three feet long covered in a black mat like the Cape palmiet, leaves very broad in proportion to their length, with a monstrous thick flower-stalk carrying a flower spike three inches in diameter. The charming little Nerine alta is plentiful—small flowers, almost reddish rosy-pink, stalks about two feet. Like the generality of nerines from the summer-rainfall area, though preferring almost boggy conditions in summer, it thrives under ordinary garden conditions and is of course very easily raised from seed. One has a feeling that in a garden most of these nerines do best rather overgrown by smallish things such as felicias or gazanias —almost in imitation of the tangle of grass among which most of them grow naturally. Along stream banks there's a rather straggling Diascia (? Aliciae)—the more compact types such as D. integerrima are, of course, grand garden subjects. Agapanthus, arum, Streptocarpus rexii in the forest. Erica brownleeii, the rather insignificant heath beside the road, two lovely pink Harveyas (the one apparently only semi-parasitic), Haemanthus, a small flowered Protea, the curious black-spotted greyish Gladiolus ecklonis, a beautifully marked pink 'pijpje', Schizostylis coccinea (of which more anon), and a host of others make this a fascinating spot.

Just a brief reference to one or two other good subjects from further on in the Eastern Province. For areas too frosty for the Kaffirboom, there are two small Erythrinas which are well worth a place in any garden— E. humeana and E. acanthocarpa—both a bit slow from seed, but obtainable from nurserymen. A good Cyrtanthus is C. obliqua, and if it will flourish in the dry heat of the Kei River valley it should be a good spring subject anywhere—very showy with its red, greenish-yellow tipped flowers. And Crinum campanulatum (aquaticum)—although we can hardly reproduce in our gardens a vlei suddenly converted into a sheet of pale pink, it is worth having in any pond or water garden—perhaps best grown in a bucket of clayey soil immersed in the rainy season, and taken out for its dormant period.

Talking of Crinums, while the curious C. buphanoides from between Potgietersrust and Nylstroom is not very exciting, all the others are worth a place in a garden— C. crispum is a smallish one from the same area—the Highveld C. longifolium has quite a good stalk carrying pale to deep pink flowers—and C. powellii is the best, as it develops a stem, will flower more than once in summer, and its scent can be smelled yards away; it is the one perhaps most commonly seen in gardens.

We're now going south from Nottingham Road in Natal, along the Underberg Road, at twenty-odd miles turning off towards the Kamberg area; and again it is February. Under the trees beside the road, masses of little white ground orchids—Disperis fanniniae, locally called granny bonnets—and you won't find anything more like a bonneted, hook-nosed, bespectacled old lady. On open hillsides little Protea simplex, only ten or twelve inches high, palest pink to deep rose, the brilliant red Brunsvigia undulata, with a more upright habit than most of the genus. Pink Watsonia densiflora, and orange W. socium. Scilla natalensis, so common hereabouts, must make a fine show in spring, with its two-foot stalks of small blue flowers. As for Dierama robustum in various shades of rose-pink—the quantities of them to be seen on the Kamberg road are an unforgettable sight. All the dieramas are easily raised from seed and are not very slow. The fantastic Kniphofia northii is said to occur on Spion Kop, and at least two other species are found hereabouts. Moreas yellow, big and bold, moreas mauve, dainty and delicate. And agapanthus—what the different species are, and where one ends and the other begins, goodness knows. Wandering up a stream bed one has seen, on a rather dry stony slope under wattles, a tiny chap with leaves eight to ten inches long and half an inch broad, with flower spikes only about fifteen inches high—then following the banks of the stream up the little valley one has seen bigger and bigger ones till one sees some to all intents and purposes of the A. umbellatus type and size. So down to the banks of the Mooi River, and masses of Schizostylis coccinea. What a distribution it has—from the Rustenburg district, through the eastern Transvaal and Natal down to the eastern Cape. And it always grows with its feet wet but its head hot and sunny. It is such an attractive thing that one is surprised not to see it grown far more—although at its best as a waterside plant, it will do sufficiently well to be very attractive in any garden where it gets a fair amount of water so as to be kept moderately damp though in full sun. It is very easily raised from seed (as long as my original mistake is not made of letting the young 'bulbs' dry off a little before transplanting them—it is not a bulbous subject at all, and in fact has remarkably little root). They're best grown crowded together in clumps. While the usual colour is a good deep red, a pinky red is not uncommon, and one was seen opposite the Kamberg which looked white until a really close-up view showed just a faint tinge of pink.

A mountain in southern Zululand with a bit of forest on its southern aspect—once more it's February. On the grassy mountain top, watsonias, a dainty little red and yellow kniphofia looking like K. galpinii, the smallest aloe in the world, A. Saundersiae, impossible to see among the grass unless in flower. In the forests a small orange begonia, and three streptocarpus, of which S. reynoldsii has small flowers but such a big cluster of them that it is very showy, and S. grandis—what a magnificent pot-plant this makes—a flower spike two feet high with up to one hundred and fifty blooms on it. Fortunately the Johannesburg Parks Department has raised over a hundred from seed, some of which are being tried in the open at The Wilds, and others in pots for the greenhouse—it is to be hoped that from here some seed may reach nurserymen for wider distribution.

We're going through Mankaina in western Swaziland towards Mbabane, and it is still February. A wonderfully coloured little watsonia which may only be a colour form of the somewhat insipid yellow W. flavida—the very deep maroony red of the crimson glory rose. Approaching Mbabane a shrub three or four feet high with red flowers the shape of Lasiandra, and that other attractive small shrub so common among the hills from there to Barberton, Dissotis incana. Turning left for Forbes Reef, lots of Watsonia flavida, and W. densiflora varying from pale pink to deep rose. A nerine the size of N. angustifolia. The Kniphofia-like notospermum. Agapanthus of the pendulus type. Beyond Forbes Reef another exciting watsonia, still unnamed—the same very deep red as the small one referred to above, but a little larger, the flowers resembling in size and shape the watsonia-gladiolus hybrid which some people call aliciae, the leaves broader and shorter than W. densiflora. Just before we begin to drop down to the Komati valley, vellozia, white, pale mauve, and deep mauve forms, the pale red Streptocarpus dunnii—and it is amazing to see this growing sometimes on hot dry stony north-facing kopjes—the lovely pink undisa-like ground orchid called Disa nervosa, Brunsvigia radulosa (ex Cooperi) of which more later. Through Pigg's Peak and on to the Havelock asbestos mine with its overhead cableway. Thereabouts all these, and two small kniphofias (which may be K. galpinii and K. rooperi var. flavo-virens), smallish agapanthus of the umbellatus type, a small aristea, a selago, with terminal clusters of flowers, in the kloofs patches of forest with enormous cussonias up to forty feet high with stems a couple of feet in diameter, and watsonias (presumably W. densiflora again). At the Angle Station Mountain we find the charming Streptocarpus galpinii—spikes of twelve to twenty rather bell-shaped inch-long flowers—the white Aloe albida, only a little bigger than A. saundersiae, a mauve sprawling Dimorphotheca. Still in the mountains about twelve miles south-east of Barberton in addition to the foregoing we see Sutera grandiflora with its plumbago-like flowers (very worthwhile garden shrub), a tall chocolate and yellow ground orchid, and our first glimpse of that wonderful shrub so common in the eastern Transvaal, the Pride of de Kaap, Bauhinia galpinii, with its trusses of orange and red flowers. In frost-free areas this is one of the finest garden shrubs, flowering from November to March, and even in areas of fairly mild frost it is cut back so slightly that it is still worth while, especially if a sheltered corner can be found for it. And the biggest chinkerinchee—Ornithogalum saundersiae, with flower stems three to four feet high—easily raised from seed.

From Barberton let's slip across quickly to the edge of the eastern escarpment at Graskop, with its magnificent gorges and krantzes. Tree ferns, watsonia (? densiflora), agapanthus of both the umbellatus and pendulus type, smallish pink gladioli, a little way up a stream water-lilies, and one of the most dainty little aloes—aptly called nubigena, which, like its close cousin A. thompsoniae at Haenertsberg, will only be found on krantzes bathed in mist. With me both these species go on flowering throughout the summer—but do not give them the dry conditions most aloes thrive in. At the top of Kowyn's Pass a very, very, deep blue medium-sized agapanthus of the umbellatus type—and perhaps the finest Transvaal watsonia, W. alpina. Six miles north near Lisbon Falls, Erica cerinthoides—and it is a curious thing that the Cape form of this species as seen on the road from Knysna to Noetzie is a poor, insignificant thing compared to the Transvaal form. In cultivation at The Wilds in Johannesburg the bushes of them, about two feet in diameter, smothered in flowers, are as fine a show of heath as one could see anywhere.

February is not yet over—to the Lydenburg district. Some miles to the south-east, a pink form of Erica cerinthoides. On the Graskop road to the east, a white form of it, and on Mount Anderson a small bi-coloured kniphofia, selago, a lovely pink gladiolus, and Watsonia wilmsii—a smallish, clear pink dainty chap, well worth cultivation—two nurserymen now have a supply of seed, so it should be available to the public in a couple of years. Almost any stream bank in the west of the district may be a blaze of red with our old friend schizostylis. In the Steenkampsberg to the west a vast variety of things—fields of crocosmia, with pleated leaves and montbretia-like flowers, leonotis (the wild dagga with tufts of orange-red flowers), Babiana hypogea with its stemless blue and cream flowers, Zantedeschia angustiloba, the yellow arum with leaves not spotted, and which wants full sun and drier conditions than Z. aethiopica, the yellow Morea moggii, agapanthus, Streptocarpus dunnii, Barberton daisies, the pink Gladiolus rigidifolius and a similar red one, Brunsvigia radulosa, chironia, the small bush dotted with red stars, and Ceratotheca triloba.

Easter—an assignation with the trout—from the Crocodile River bridge, between Machadodorp and Lydenburg, about ten miles north below the escarpment—rivers in spate—no fishing, but plenty of flowers. Ceratotheca triloba ('Wilde Jakhals-handskoen'—not inappropriate if you can puzzle it out)—pity it is not more free-flowering. The biggest Brunsvigia radulosa one has seen—big broad leaves lying close on the ground—big head of pink flowers—one head in seed measured just over two feet in diameter, but you'll have to get there before the beetles and baboons if you want seed. An expert says that the similar brunsvigia found near Welkom in the Free State, whose leaves come out after the flower, is probably the same species, the variation being due to climatic differences. Numbers of Scilla natalensis had flowered months earlier. Dais cotinifolia reaches fifteen or twenty feet in the valleys, and is another worth-while garden shrub, which does not mind frost—its little clusters of sweet scented pink flowers in early summer make quite a good show. In an old donga a pale red form of Erica cerinthoides grew shoulder high.

Scant reference has been made to aloes, but one can't travel very far in South Africa without seeing one or other of this genus. Some gardeners feel that their flowering period is too short to compensate for the prolonged period of 'nakedness'. The answer to this is to grow them not by themselves in a more or less succulent rockery, but to grow them in groups of three or four of a species in among other things which will give colour at other times. And for those who tire of seeing their winter-flowering ones wilting from frost just when in full flower, one would stress the use of the summer-flowering ones. A. comptonii (ex parvispina) from the Willowmore-Steytlerville area makes a good show in October. A. vogtsii from the Zoutpansberg is a small spotted leaved one with a very generous deep red flower spike, which flowers in February or March. A. aristata, A. pratensis, and A. brevifolia are small ones flowering in the first half of summer. For the second half of summer A. reitzii from the eastern Transvaal, and A. gerstneri from Zululand, are two biggish very spectacular ones, while perhaps one of the best of all aloes as a garden subject in March is A. fosteri—spotted leaves about fifteen inches long, spikes four to six feet high of flowers anything from pale yellow to deep red—the big splotches of colour it makes among the thorn bushes between Pilgrim's Rest and Ohrigstad are a wonderful sight. And, of course, all the 'deciduous' aloes of the cooperi, vossii, kniphofioides type flower in summer.

The scribbler of the foregoing hopes that its amateurish inadequacy will so annoy and provoke the experts that some of them may contribute something better on this subject to future issues of the Journal.

South African Proteaceae and their Cultivation

By H. F. WERNER

INTRODUCTION AND DESCRIPTION

All the members of the South African Proteaceae are evergreens, usually with entire, leathery and often hairy, leaves, and in horticulture they fall into a class termed 'hard-wooded'. They usually take the form of shrubs or shrublets but include tree size such as *Leucadendron argenteum* (silver tree) and *Faurea* spp. (notably *F. macnaughtonii* a fine evergreen, forest tree).

They rank as some of the finest indigenous plants of South Africa, and some can be regarded as among the most highly ornamental shrubs in the world.

The family is, of course, one of the most conspicuous features of the south-western—winter rainfall—flora of South Africa, where the greatest number of species, as well as the showiest, are found, with comparatively few representatives in other parts—summer rainfall.

In recent years it has been demonstrated that the successful cultivation of this family in various parts of South Africa, outside their respective natural habitats, makes them no longer such 'difficult' plants as has hitherto been the popular notion. Likewise in Australia, New Zealand, parts of the United States, such as California, as well as countries with comparable conditions, success has been achieved.

The National Botanic Gardens of South Africa, Kirstenbosch, have been largely instrumental, through dissemination of seeds and information, in bringing into cultivation these beautiful and unique plants.

The information supplied in this article is based on the investigations and practical results over a number of years of work by these gardens in propagational and cultural methods. Slight adjustments in methods to suit any particular local conditions elsewhere could easily be made.

Needless to say, a very comprehensive collection of the various genera and species is now in cultivation here, and with the diverse flowering seasons to be met with in such a large family, visitors to Kirstenbosch can at most times of the year see representatives in bloom—with the greatest number during winter, spring and early summer.

Space considerations in this article do not permit details of all species, and attention is perforce drawn to the most noteworthy. The heights given for the various species are average heights: some species become much taller with age, but then become 'leggy' and lose their garden value.

LEUCOSPERMUM. In dealing with the ornamental value of the Proteaceae as garden plants we must give pride of place to the genus Leucospermum (Pincushions). Two beautiful species are *L. bolusii* (5 ft.—widely spreading) and *L. nutans* (5 ft.—widely spreading); their lowest branches sweep the ground and the plants are symmetrical mounds of flower heads about mid-winter until the summer. The flower heads (yellow, golden, or reddish in the former species, and reddish in the latter) are circular and consist of a close cushion of recurving or rolled florets with protruding styles giving the typical pincushion effect.

The above colours are the predominant ones in the genus, but there is a fairly wide range of variation, according to species. Among other showy species with flower heads resembling more or less the above species are *L. attenuatum* (5 ft.), *L. catherinae* (4 ft.), *L. grandiflorum* (5–6 ft., erect), *L. incisum* (5 ft.), *L. lineare* (4 ft., with needle-like leaves), *L. praemorsum* (6 ft., erect).

In a class of its own is the magnificent *L. reflexum* (10–12 ft.) with silver-grey leaves and large orange-scarlet heads which have the further unique feature in the changing of position of the styles as they age. This species makes a fine upright, well-branched bush, with great numbers of heads open at one time; they are borne on long straight stems, appearing early in winter and continuing into the summer.

Another gem is the comparatively dwarf *L. tottum* (3–4 ft.) with masses of pinkish-buff heads on symmetrical bushes, branched to ground level. Somewhat later blooming than most others.

Species with smallish heads include *L. album* (4 ft.) with numerous heads in clusters, opening white and turning to pale pink, scented; *L. crinitum* (4 ft.) and *L. muirii* (4–5 ft.).

Of prostrate species *L. prostratum* is superb for draping low walls; it bears numerous small golden flower heads, later becoming crimson, also scented. Also useful in this class is *L. stenanthum*.

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The leucospermums, as cut flowers, have exceptional lasting qualities, packing and travelling in perfect condition. The flowering season of the genus extends from winter until well into the summer months.

PROTEA. The genus Protea is characterized by the conspicuous involucre of scales (usually very colourful and often adorned by means of a beard at the tips) which surrounds the head of the flowers. The predominant colour range in this genus is pink, with occasional albinos; other colours are reds and, more rarely, greens.

As a 'national emblem' of South Africa the protea is, perhaps, too well known to require a detailed description; and space only permits mention of some of the most noteworthy species in this large and diverse genus.

Outstanding is *P. cynaroides* (giant or king protea) with immense hemispherical heads, often nearly 1 ft. across, which vary from silvery pink to deep rose or creamy white, according to variety. The plants are usually 3–5 ft. high (taller in semi-shaded situations) and throw new stems from the base of the plant. Flowering time is variable.

Also outstanding is *P. barbigera* (big woolly protea), bushes usually about 5 ft. high, with somewhat glaucous leaves. The heads are remarkable for the woolliness of the white-bearded tips of the involucre scales and centre of the head. Colours are to be had in shades of pink, sometimes pale sulphur-pink, as well as white—in bloom from late winter into spring. Other showy bearded species are: *P. lepidocarpodendron* (6–8 ft.), *P. marginata* (12 ft.), *P. neriifolia* (8–10 ft.), *P. stokoei* (4 ft.), *P. speciosa* (2 ft.). With somewhat less beard are: *P. grandiceps* (4–5 ft.) and *P. pulchella* (3–5 ft., spreading).

Among beautiful species with beardless scales we can include *P. compacta* (8–10 ft., heads borne on long stems, ideal for cutting), *P. mellifera* (sugar bush) (6–10 ft.), *P. obtusifolia* (10 ft.). In one or two in this section, such as *P. latifolia* (8–10 ft.) and *P. longifolia* (5 ft.) the 'centre' is very attractive.

A further section could comprise those species wherein the attraction lies chiefly in the well-exposed styles, especially *P. grandiflora* (8–10 ft.) and *P. longiflora* (10 ft., flower head with an involucre which lies wide open, almost water-lily-like). *P. lacticolor* (12–15 ft.) with small heads is also very charming.

Among comparatively dwarf species, mention should be made of *P. rosacea* (mountain rose) (3 ft.) with needle-like leaves and pendulous heads in wine-red or green, *P. pityphylla* (1–2 ft.), *P. minor* (1–2 ft.) and *P. cedromontana* (3 ft.).

While the flowering season of the greater number in the genus may be regarded as winter and spring, there is no lack of species to complete the cycle of the year.

LEUCADENDRON. In the genus Leucadendron the best known is probably *L. argenteum* (silver tree) about 30 ft. in height, with its silky, silver-grey leaves. Other species fall into the shrub class, with a number of decorative species. Their beauty lies chiefly in the upper leaves surrounding each head becoming enlarged at flowering time and adopting bright colouration, notably shades of yellow—often assuming beautiful tints in some species as the leaves age. The genus, it should be noted, is dioecious and in some cases the male, and in other cases the female plants, provide the greater attractiveness, either in foliage or inflorescence, or both, as the case may be. Most species are at their best during winter and spring.

Some of the most showy species, besides *L. argenteum*, are: *L. adscendens* (variable), *L. aemulum* (5–6 ft.), *L. decorum* (6–8 ft.), *L. sericocephalum* (6 ft.), *L. venosum* (4 ft.).

AULAX. Allied to Leucadendron is the genus Aulax (the only other in the South African Proteaceae in which the species are dioecious). The male plants have the flowers in small racemes, giving the inflorescence a feathery appearance, while the female plants have the flowers in the form of involucrate heads. The species represented are: *A. cneorifolia* (7 ft.), *A. pallasia* (8–10 ft.), *A. pinifolia* (8 ft.). All have very narrow leaves.

MIMETES. A genus of merit is Mimetes. Unfortunately one or two beautiful species are somewhat rare in the wild and seldom found in cultivation. One or two may be on the verge of extinction. In this genus the heads are borne in the axils of the upper leaves which are sometimes coloured bright pink when the flowers appear as, for example, in *M. lyrigera* (3–4 ft.) and *M. hartogii* (6–9 ft.), which are very colourful from late winter into the summer. *M. hirta* (5–6 ft.) has green, hairy leaves; other species have silver, hairy leaves.

OROTHAMNUS. A monotypic genus is Orothamnus, which provides us with the rare *Orothamnus zeyheri* (marsh rose) (5–6 ft.) with its remarkable drooping flower heads in which the fleshy scales are a brilliant, translucent red. The plants are erect, with few stems, bare below, and the heads are borne terminally. This rare species has been successfully raised and flowered at Kirstenbosch from seeds obtained from the wild (*Reports and Accounts of the National Botanic Gardens of South Africa*—1950 *and* 1951—*Reports of Curator of Kirstenbosch*). Further research into the behaviour of this plant in cultivation will yield valuable data for its preservation from extinction.

Serruria. The genus Serruria provides among its numerous species at least one of outstanding beauty, namely *S. florida* (blushing bride) (3–5 ft.) whose delicate pink heads are borne on slender branches with divided leaves: the plants are only sparsely branched, and are sometimes comparatively short lived owing to their profuse and lengthy flowering habit—from early winter until the beginning of summer. On the verge of extinction in the wild on more than one occasion in recent times, it was first flowered at Kirstenbosch in 1917, and has since been very successfully cultivated. For cut-flowers and bouquet work this plant is superb. *S. rosea* is very similar. Other useful, albeit less showy, species are: *S. aemula* (5 ft.) and the neat, well-branched bushes of *S. artemisiaefolia* (3–4 ft.).

Paranomus. The genus Paranomus deserves to be grown much more widely, especially *P. reflexa* (5 ft.), a well-branched symmetric bush bearing masses of fairly large yellowish-green pincushion-like heads during the winter. This plant is also interesting in that, through dimorphism, the lower leaves on the branches are divided while the upper ones are entire. *P. crithmifolia* (4 ft.) is attractive with its pinkish-grey inflorescences in spikes.

Brabeium. The genus Brabeium is represented by only one species, namely *B. stellatifolium* (wild almond) (15–20 ft.). It was used by Van Riebeeck for planting a hedge in 1660—portion of the original planting is still preserved at Kirstenbosch. The inflorescences of this plant are dense spike-like racemes borne in the axils of the leaves, followed later by velvety brown fruits. The leaves are arranged in whorls—unlike any other member of the Proteaceae.

Propagation and Cultivation

The most practical method of propagation is by seeds. Sowing of seeds at the National Botanic Gardens is done with the advent of the autumn and winter rains—about April. It has been found by general experience and investigation in this matter that the seeds are no doubt encouraged to germinate by the even, moist conditions, and that the seedlings likewise are benefited by the generally cooler conditions, prevailing at that time of the year. Damping-off caused by high humidity or excessive wetness in the soil should therefore be one of the factors to be guarded against.

Another factor is the question of sound seed. In some *Protea* spp. and others, the percentage of fertile seeds is very low indeed. In the case of the majority of *Protea* spp. the flower-heads require a year at least in which to ripen their seeds, and the heads remain intact on the plants for a few years. Upon collecting and drying these older heads, the seeds are liberated. *Leucospermum* spp., *Serruria* spp., and *Paranomus* spp. ripen their seeds soon after the heads are over. *Leucadendron* spp. vary up to twelve months, according to species, the silver tree taking longer.

The low percentage of fertile seeds in the case of certain *Protea* spp. has been mentioned. This is further complicated by the fact that the seeds are, in many cases, very hairy, rendering the task of picking out the plump, fertile seeds somewhat difficult, unless the hairs are more or less rubbed off first.

Seed-sowing. Various methods of seed-sowing have been tested at Kirstenbosch over the years, and the best all-round results have invariably been obtained by sowing the seeds in nursery beds (in fairly light soil, with which is incorporated some compost or leaf-mould). These beds should be in the open and not shaded in any way.

The easiest method of sowing is by forming drills across the beds at, say, 6–9 in. intervals, the depth depending on the size of the seeds, an average depth being about ¾–1 in. The drills can easily be made by pressing a strip of wood into the bed to the requisite depth. The seeds are spaced 1 in. apart in the drills, covered with a sandy mixture, firmed down, and the beds kept moist—the secret of success being the maintenance of an even degree of moisture. Should the degree of moisture fluctuate too greatly, germination can be seriously delayed—so much so that the seeds of *Leucospermum* spp. for instance, may remain dormant.

Apart from fluctuations in soil moisture which should be guarded against, it may also, perhaps, be necessary to give protection against disturbance of the beds by moles or depredations by mice or birds, as also protection against excessive rain, or other abnormal conditions.

Recent experimental work at Kirstenbosch in nursery-bed methods have shown that if these seed beds are prepared in garden frames (brick with the usual movable lights) this is an ideal method. In this connection, if the frames are deep, it would be advisable for the beds to be raised somewhat to provide maximum light and air for the seedlings when they appear.

Tinning of seedlings. Germination varies according to genera and species, being anything from three weeks and upwards before the cotyledons show above ground.

When the first true leaves are formed the seedlings are ready for lifting—either for tinning into individual containers or planting out into permanent positions. It has been found that better results are usually obtained by 'growing on' the seedlings for their first season in tins, for better control of watering and control of pests.

Manufactured galvanized iron tins (about 4–6 in.) which can be opened out for removal of the plants with minimum disturbance at planting time, or 2 lb. jam tins, are suitable—except for the silver tree which is a robust grower and requires a larger tin.

The soil for tinning is any average light type of soil enriched with some compost or leaf-mould, also a little bonemeal. The tins should have the usual provision for drainage.

In tinning the seedlings, the cotyledons should be kept just above soil level. It is advisable also to sever the growing tip of the tap roots if this was not broken in lifting from the seed bed. In any case a slight reduction in length of the tap root if unduly long would not do any harm. The effect will be to encourage a fibrous root system, apart from actually facilitating transplanting. Watering should be carefully regulated, as excessive moisture at this stage might cause wholesale damping off.

As the plantlets gradually increase in size, so watering can be increased accordingly. In mid-summer the intensity of the heat and rapid drying out of the tins can be minimized by placing the plants under a lath shelter (laths fairly widely spaced to prevent soft growth taking place in the plants).

In due course the young plants should have the growing tip removed (except silver tree) to encourage bushy growth. Species such as *Protea cynaroides* and *Mimetes lyrigera* which branch naturally from the base do not require this 'stopping'.

Towards the end of the summer the young plants are best stood right out in the open to harden their growth. Should they show signs of starvation in the tins, a little feeding could be resorted to. Any rooting through of the plants should be guarded against and emerging roots from the tins removed as they appear.

PLANTING OUT. The young plants in tins are planted out as one-year-olds. In the Cape this coincides with the advent of the rainy season in autumn, but elsewhere regular watering would be required at that time to assist the newly set-out plants in becoming established.

Before attempting to remove the plants from their containers they should receive a good watering. In removing from jam tins squeezing the top of the tin and then giving the bottom rim a few sharp taps with the trowel, will facilitate removal of the plant ball intact.

The holes for receiving the plants should be prepared beforehand by removing a spade's depth of soil and breaking up the bottom layer in the hole, mixing in a little leaf-mould or compost, after which the top soil is returned and likewise enriched, plus a little bonemeal and/or a dusting of superphosphate. Planting must be firm.

The majority of the species of South African Proteaceae, being mountainside or koppie plants or otherwise growing in well-drained situations, experience has shown that the best results in cultivation of this class is a well-drained loam. Only in rare exceptions, such as *Orothamnus zeyheri*, and one or two others, are marshy conditions desired. The great majority require full sun. Under cultivation pests and diseases are fortunately not unduly troublesome. Generally speaking the adaptability of the members of this family to various soils and conditions is remarkable. Their flowering stage is also reached reasonably soon, according to species, after the sowing of the seeds.

'IN SITU' SEED-SOWING. For gardeners not able to carry out the seed-bed and tin method as described, it is possible to modify this method by planting the seedlings directly from the seed-beds into their permanent positions or, alternatively, sowing the seeds 'in situ' in prepared positions where the plants are to remain permanently. Three seeds should be sown in each spot and any resultant surplus could be transplanted—remembering that this must be done early on.

But while 'in situ' sowing may appear to be labour-saving, there is less control over the welfare of seedlings. Likewise, sowing the seeds in pots or 'flats' (boxes or tins) has drawbacks; experience has shown that, excluding one or two species, this latter method gives unreliable results, as fluctuations in the degree of warmth and moisture preclude good results being obtained.

Progress in the Study of the Silver-tree Disease

By DOROTHEA OLIVIER

SILVER-TREES are notoriously apt to die off suddenly, and people who have grown them have noticed that dead trees often show signs of the activity of wood- and bark-boring beetles. The damage is often heavy enough to account for the death of the tree, and it is, perhaps, natural that the beetle came to be regarded as the primary cause of the high mortality in this species. However, if a number of dying trees are examined it becomes apparent that they are not all heavily infected; in fact, they often show fewer beetle exit-holes than do apparently healthy trees.

During 1943 and 1944 entomologists of the Forestry Department examined trees at Kirstenbosch and at Claremont, and a short report by Dr. F. G. C. Tooke appeared in Part XXX of this Journal.

Dr. Tooke's conclusions were that borer injury was seldom extensive enough to cause the death of the tree: most of the dead trees he examined showed, in fact, no trace of beetle attack at all. Instead, he noticed, a brown stain in the bark of the dying trees extended from one to three feet up the tree, all the way round the base of the trunk and into the roots; this, he suggested, was a symptom of some other agency which might be responsible for the death of the trees. This paper gives a preliminary account of work carried on at the University of Cape Town in an attempt to determine the nature of this agency.

The patch of dead bark at the base of the trunk noticed by Dr. Tooke is always present in trees showing the wilting which is the first sign of the disease; it may occasionally be seen in apparently healthy trees, but these later also develop the typical wilting symptoms. The area of dead tissue extends into the root system; a large proportion of the smaller roots die before the leaves begin to wilt. If the tissues are examined microscopically the dark threads of a fungus can be seen in the cells of the dead bark and in the underlying wood. Cultures made from a very large number of dying trees all produced the same fungus: rapidly growing, white and fluffy at first, gradually darkening and finally becoming a very dark grey. When grown on the agar media normally used in the laboratory the fungus remains obstinately sterile, but if it is transferred to sterilized woody twigs it produces small, flask-shaped fruiting-bodies (pycnidia) containing large colourless, single-celled, spindle-shaped spores. Similar pycnidia may be found, if searched for carefully, just above ground-level on dying trees. Within a fortnight of first wilting, in most cases, all the leaves wither; and the previously uninfected parts of the tree are rapidly invaded by the fungus. By the time the tree has been dead for about two months the whole surface produces the little fruiting-bodies in enormous numbers. They are very inconspicuous; all that can be seen is a series of minute cracks in the bark, but if the surface layer is shaved off very thinly black masses of fungus tissue, with small, brilliantly-white dots, each of which is a cut pycnidium filled with spores, may be seen. During the winter a second type of fruiting-body is formed: the perithecium. The discovery of both types of reproductive structure made it possible to identify the organism, with interesting results.

The fungus was identified by Mr. S. J. Hughes, of the Commonwealth Mycological Institute, Kew, as *Botryosphaeria ribis* (Tode ex Fr.) Gross and Dugg. It is a well-known parasite of many trees, causing canker, dieback and wilt diseases. It is also of some importance as a cause of storage rots of fruit. Most of the reports of serious disease due to the attacks of Botryosphaeria come from warm countries: the fungus may be found causing bark canker and fruit rot of avocado in Trinidad or California, a bark disease of citrus in Batavia, a die-back of mangoes in Hawaii. An interesting account of a serious disease of the Tung-oil tree (*Aleurites*) has recently appeared from Nyasaland. It has previously been reported from the Union on apple, guava and vine.

The reports indicate that other trees attacked by Botryosphaeria develop symptoms which in some ways resemble those of the diseased silver-trees: for instance, the fungus has been reported as causing a bark disease of pears. Starting at soil-level, it works up and round the trunk and finally kills the tree. It may cause similar conditions in guava, avocado, loquats, walnuts, and a variety of other plants.

The chief characteristics of Botryosphaeria disease of trees appear to be the killing of areas of bark and a sudden wilt and death of branches above the site of infection, sometimes of the whole tree. Infection may be by way of wounds, or the fungus may attack the young growing tips and cause a dieback of the shoot. When it has grown down the infected branch and reached the trunk it may cause a blighting of the rest of the branches above the point of infection. The growth of the fungus through the tissues may be remarkably rapid; a rate of two centimetres a day has been recorded.

Attempts to infect full-grown silver-trees experimentally with pure cultures of the fungus have, so far, not been successful, but one- and two-year-old trees react well to inoculation. This is done by first sterilizing small splinters of elm-wood and inoculating them with the the fungus, which is allowed to grow for two weeks. The splinters are then inserted into slits cut in the bark of the young trees, and the wound bound with grafting-tape. In a month to six weeks the inoculated plants wilt and die in the same way as do diseased plants in the field. Pycnidia of Botryosphaeria are produced near the point of inoculation and the fungus may be isolated in pure culture from any part of the dead tree.

There seems, then, to be some justification for assuming that Botryosphaeria is a primary cause of the silver-tree disease. The symptoms of the disease are very definite and always follow the same course, showing striking similarities to those produced by Botryosphaeria infection on other species; characteristic fruiting-bodies are found on all dead and dying trees, and it has been found possible to reproduce the disease in young trees by inoculation with pure cultures of the fungus. The inoculation experiments cannot, however, be considered satisfactory until a technique has been worked out for successfully infecting mature trees.

One very important problem remains unsolved: that of how the primary infection of the tree occurs. Some attempts have been made to work this out, with, so far, inconclusive results.

It is not certain whether infection occurs above or below soil-level. The appearance of the dead area of bark at the base of the trunk suggests that the disease first becomes established in the roots, then gradually moves up the trunk. If this is so, the source of infection must be either the soil surrounding the roots or diseased roots of neighbouring trees. The first of these alternatives does not seem very likely; *Botryosphaeria ribis* is not normally a soil-inhabiting fungus; there is, in fact, some experimental evidence that it is not capable of surviving in the soil for more than a very short time. It does seem possible that some infection may occur as a result of the roots of living trees coming in contact with those of dead trees or stumps, but the characteristic distribution of the disease makes it seem unlikely that this is the only way in which it can come about. If root contact were the only means of infection the diseased trees would be grouped around old stumps which would act as centres of infection. A glance at the silver-trees at Kirstenbosch will show that dying trees are not grouped, but scattered, singly, and without any apparent relationship to the position of dead stumps, through the groves.

On the whole, it seems more likely that infection takes place above soil-level, and that the fungus grows simultaneously down into the roots and up through the stem. The distribution of the mycelium in the tissues of the root seems to support this theory, but there is, so far, nothing to show how the fungus gets into the trunk in the first place. Two possibilities suggest themselves: that small wounds in the bark, caused by beetle attack or otherwise, become infected by wind-blown spores; or that beetles emerging from diseased bark carry the fungus to other trees.

The only control method that can be suggested at this stage is the removal of the source of infection. Dying trees should be cut down as soon as possible after the first signs of wilting appear, as pycnidia begin to be formed very early; and, if possible, no stump should be left above ground-level. The trunk should be removed and burnt, as fruiting-bodies will form and discharge their spores on any fragments of the dead tree left lying about. It is not to be expected that these measures alone will bring about control of the disease, but they might help to keep down the number of new infections. When it has beeen discovered how the fungus gets from diseased plants to healthy ones, what part of the tree is first infected, and at what season this happens, it may be possible to suggest more comprehensive control measures.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT, 1951

Your Council has pleasure in presenting the Thirty-Eighth Annual Report of this Society for the year ending 31 December 1951.

Membership.—New Members enrolled during the year totalled 343. Resignations and deaths totalled 69. Members who had lapsed in their subscriptions for two years numbered 162, and these, unfortunately, have had to be deleted from the membership roll. The net gain to the Society for the year is 112. The total membership of the Society now stands at 2,560, including 162 Life Members.

Financial.—A total income of £2,807 3*s*. 8*d*. was received by the Society during the year. Expenses amounted to £630 18*s*. 4*d*. leaving a balance of £2,176 5*s*. 4*d*. which forms the Society's Grant to the Trustees of the National Botanic Gardens, Kirstenbosch, and the Karoo Garden, Worcester, for the year 1952. Fixed deposits and investments amounted to £3,945 8*s*. 5*d*. The Life Members Fund at the year end stands at £1,750 5*s*. 4*d*. No payments were made from this fund during 1951.

Wild Flowers Protection Section.—The Annual Report of the Committee is annexed.

'Wild Flowers of the Cape of Good Hope.'—After many years of work on this book, the Publications Committee were happy to see the culmination of their efforts when the first copies came off the press in November. It would appear from the favourable reports received from the recipients of copies, and also from the many reviews it has received, that this work is proving very popular. As publication was not until November, however, it is difficult at the year end to fully assess its worth, but it certainly seems to have been well received in South Africa and it is hoped that this will be substantiated by orders from overseas in due course. Of 10,000 copies of the book which have been printed 500 have been specially bound, numbered and signed, as the de-luxe limited edition. During the year two exhibitions of Mrs. Garrett Rice's original paintings for *Wild Flowers of the Cape of Good Hope* were held at which a number of the pictures were sold for the sum of £403. In response to numerous requests it is proposed to stage another exhibition of the remaining pictures during 1952.

Van Riebeeck Festival.—The Cape Provincial Administration have invited the Botanical Society to co-operate with the Floral Section Exhibits at the Van Riebeeck Festival Fair to be held during 1952. Plans are therefore in progress in conjunction with the National Botanic Gardens.

Seed Distribution.—The number of packets of seeds distributed by the National Botanic Gardens from Kirstenbosch and Worcester to Members of the Botanical Society during the year was 11,346.

Journal of the Botanical Society, Part XXXV.—Edited by Professor R. H. Compton, Director of the National Botanic Gardens, was published during the year and issued to all members, learned Societies, etc.

Meetings of the Society.—There were nine meetings for Members of the Society held during 1951, all of which were very well attended. Of particular note was the Annual Gathering which was held on the new lawn at Kirstenbosch on 9 October in perfect weather. This was followed by a visit to the lecture hall where the original paintings for *Wild Flowers of the Cape of Good Hope* were on view. Very enjoyable outings were spent at Mr. and Mrs. F. C. Batchelor's Wild Flower Nursery at Stellenbosch, and at Mr. and Mrs. E. J. Scholtz's lovely Wild Flower Garden at Muizenberg. On both these occasions our hosts and hostesses provided the large gathering with delicious refreshments. Other meetings included a 'Visit to the Kirstenbosch Herbarium' by Miss W. F. Barker, B.Sc., and 'A Talk on Soils' by Doctor John Fisher. On 2 May Mr. H. B. Wellman, a visitor from the United States of America, delighted us with his unique collection of colour slides of American and Australian parks and gardens. It was most unfortunate that the Anniversary Meeting at the Karoo Garden, Worcester, held on 29 September was, owing to very inclement weather, only sparsely attended. Mr. and Mrs. J. Thudichum and helpers generously provided refreshments for the Meeting.

The Council of the Society acknowledges with sincere appreciation all who so generously helped in any way to make these meetings the success they were.

Office Bearers.—At the Annual General Meeting of the Society held on 27 March the following were elected:

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, The Hon. E. F. Watermeyer.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council:

Professor R. S. Adamson
Sir Alfred Beit
Mr. D. R. D'Ewes
Mr. C. H. Clayton
Dr. E. L. Gill
Miss M. E. Johns
Mrs. M. Kidd
Mrs. M. R. Levyns
Mr. W. C. West
Mrs. F. Bolus
Miss G. J. Lewis
Mr. J. S. Linley
Miss K. Murray
Mr. H. Porter
Mr. E. J. Scholtz
Mr. L. A. Solomon
Miss E. L. Stephens
Mr. M. Clough
Mr. G. E. Williamson
Mr. C. R. Gohl.

Mr. C. J. Sibbett was again elected Chairman of the Council at its first meeting.

Obituary.—It is with very sincere regret that your Council records the death of twenty-four Members of the Society during the year. Letters of condolence have been sent to all known relatives.

Thanks.—Sincere thanks are here recorded to the Cape Provincial Administration and to the Cape Times Ltd. for the use of their rooms for meetings during the year. Appreciation is also extended to the daily Press for their ready co-operation in reporting the Society's activities during the year.

C. J. Sibbett,
Chairman.

(Mrs.) W. N. Hall,
Hon. Secretary/Treasurer

PUBLICATIONS ON SALE AT KIRSTENBOSCH

The following may be obtained by application, enclosing payment, to The Hon. Secretary, Botanical Society, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

'Cape Annuals for the Garden'; F. W. Thorns. (Dimorphotheca, Felicia, Ursinia, etc. 1 plate.)	6*d.*
'Economic Plants at Kirstenbosch'; F. W. Thorns. (Lavender, Mint, Sumach, Pyrethrum, etc. 1 plate.)	6*d.*
'South African Trees and Shrubs at Kirstenbosch'; F. W. Thorns	6*d.*
'The Cultivation of non-succulent South African Plants' (78 pp.); J. W. Mathews. (The only book on the subject: valuable in connection with the Garden seed-lists.)	2/4
'The Genus Oxalis in South Africa'; T. M. Salter. (355 pages, 10 plates, 73 text-figures.)	35/-
'The Species of Oxalis occurring in the Cape Peninsula and how to distinguish them'; T. M. Salter	6*d.*
'General Hints on Raising Indigenous Plants from Seed'; H. F. Werner	6*d.*
'The Cultivation of Succulents in South Africa'; H. Hall	6*d.*
'The Wilds, Johannesburg'; Miss G. Edwards	6*d.*
'A Tip for Horticultural Societies'; Dr. N. R. Smuts	6*d.*
'The Cultivation of Buchu'; H. F. Werner	6*d.*
'The National Botanic Gardens of South Africa, Its Aims, Functions and Policy'; R. H. Compton	6*d.*
'Plant Collecting in the Kaokoveld'; H. Hall	6*d.*
The Journal of South African Botany; Vols. I-XVII, each volume in four quarterly parts; per part, 6/6; per volume, 20/-. (To Members of the Botanical Society, 5/- and 15/- respectively.) Continuing.	
Annual Reports of the National Botanic Gardens, 1913-1951, each year	3*d.*
Reprints available of articles published in the Journal of South African Botany	6*d.* each.

Wild Flowers Protection Section Committee

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1951

Four meetings of the Committee were held during the year.

Membership.—A total of 51 New Members was enrolled to the Section during 1951. The full membership now stands at 539.

Financial.—The sum of £159 7*s.* 0*d.* was received in subscriptions during the year; this is an increase of £1 6*s.* 0*d.* over 1950. In addition to this the Cape Provincial Administration Grant-in-Aid of £150 was received. Fixed deposits amounted to £396 10*s.* 4*d.* The full amount standing to the credit of the Section as at 31 December 1951 is £730 10*s.* 11*d.*

Contravention of the Wild Flowers Protection Ordinances.—Mr. H. D. W. Meyer has again been very active during the year in tracking down offenders against the Ordinances. Below is a summary of his reports:

Number of Cases Summons applied for ..	270
Including:	
Selling Protected Species	17
Having no Licence	76
Children under 16 trading	28
Other Offences	149

Of the above cases 173 were convicted by the courts, 58 are still pending and 71 were withdrawn. (Many of these the Police were unable to locate at addresses given.)

The figures as shown above show a decrease of 29 over the year 1950 which is an encouraging factor.

Mr. Meyer's report does not in any way exhaust the work done by the Committee. During the year reports of contraventions against the Ordinances have been received from places farther afield than the immediate vicinity of the Cape. All of these reports have been investigated and taken up with the local authorities.

Wild Flowers Protection Propaganda.—The co-operation of the South African Broadcasting Corporation was sought during the year when they willingly agreed to the broadcasting of slogans in the cause of Wild Flowers Protection. Mr. C. W. Smith, Compiler of Gardening Talks, broadcast over the air, also generously co-operated by agreeing to the Committee's suggestion that a monthly cash prize be awarded to the writer of the best letter on growing our wild flowers from seed. This idea has proved most popular. To all those who have helped to make this competition the success it has proved to be, the Committee record their grateful thanks.

Wild Flowers Protection Ordinances: Inclusion of New Protected Species.—For some little time, the Wild Flowers Protection Committee have been gravely concerned by the manner in which large numbers of wild flowers have been finding their way into the public markets. They have been arriving in such large quantities that unless steps are taken now to protect them, the complete extinction of many of the species is certain in a very short time. In November, therefore, a Special Meeting of the Committee was called at which it was resolved to recommend to the Administrator of the Cape Province that a number of additional species of wild flowers be included on the Protected List.

Members of the Committee for 1951:

Professor R. H. Compton
Mrs. F. Bolus
Mr. C. H. Clayton
Dr. E. L. Gill
Mr. C. R. Gohl
Senator M. J. van Breda
Mr. J. S. Linley
Miss K. Murray
Mr. C. St. L. Searle
Mr. H. N. Porter
Dr. H. B. Rycroft
Mr. C. J. Sibbett
Miss M. E. Johns
Mr. W. C. West.

Professor Compton was again elected Chairman at the first meeting of the Committee.

R. H. Compton,
Chairman.

(Mrs.) W. N. Hall
Hon. Secretary/Treasurer

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31 DECEMBER 1951

	£ s. d.	£ s. d.
Life Membership Fund:		
Balance as at 1/1/51	1,534 15 11	
Received during 1951	215 10 0	
		1,750 5 11
Subscriptions Paid in Advance . .		229 15 6
Dr. Bernard Price Bequest Fund		700 0 0
National Botanic Gardens:		
Surplus for Year		2,176 5 4
		4,856 6 9

	£ s. d.	£ s. d.
Cape of Good Hope Savings Bank:		
Deposit with Interest at 3½% p.a. to 31/12/51		764 4 11
Post Office Savings Bank:		
Deposit with Interest at 2½% p.a. to 31/12/51		81 2 5
United Building Society:		
Fixed Deposit for twelve months with Interest at 3½% p.a. to 31/12/51 . .	537 18 1	
Savings Bank Account with Interest at 2% to 31/12/51	536 4 3	
		1,074 2 4
S. A. Permanent Mutual Building Society:		
Fixed Deposit for twelve months with Interest at 3½% p.a. to 31/12/51	437 9 7	
Fixed Deposit for twelve months with Interest at 3½% p.a. to 31/12/51	806 13 10	
		1,244 3 5
Cash at Standard Bank of S.A. Ltd.		
Current Account	906 6 1	
On Hand	1 12 3	
		907 18 4
Miscellaneous Assets: . .		
Reprints from Journal—Stock on Hand	5 6 2	
Amount due from Wild Flower Protection Section	23 17 0	
		29 3 2
Dr. Bernard Price Bequest—Investment Fund:	23 3 2	
Fixed Deposit for twelve months with the United Building Society with Interest at 3½% p.a. to 31/12/51		755 12 2
		4,856 6 9

	£ s. d.	£ s. d.	£ s. d.
Wild Flower Protection Section Fund:			
Balance as at 1/1/51		634 15 8	
Grant from Provincial Administration		150 0 0	
Subscriptions received during 1951		159 7 0	
Donation		10 0 0	
Interest received during 1951 . .		13 13 6	
		967 16 2	
Less 5% of 1951 subscriptions credited to General Administration Expenses	7 19 0		
Salaries re Part-time Services	195 0 0		
Stationery, Printing, Postages, Bank Charges, etc. . .	34 6 3		
		237 5 3	
			730 10 11
			£5,586 17 8

	£ s. d.	£ s. d.
Wild Flower Protection Section:		
Fixed Deposit for twelve months with S.A. Permanent Mutual Building Society with Interest at 3½% p.a. to 31/12/51	271 19 9	
Fixed Deposit for twelve months with S.A. Permanent Mutual Building Society with Interest at 3½% p.a. to 31/12/51	124 10 7	
Cash at Standard Bank of S.A. Ltd.—Current Account	357 17 7	
Less Amount due to General Account	23 17 0	
		730 10 11
		£5,586 17 8

We have to report that we have examined the above Balance Sheet with the books and vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shown by the books of the Society.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31 December 1951.

	£	s.	d.	£	s.	d.
To Postages, Receipts and Sundry Expenses				43	6	9
,, Audit Fees				15	15	0
,, Honorarium to Secretary-Treasurer				200	0	0
,, Bank Charges				6	4	10
,, Stationery, Printing, Duplicating, etc.				159	12	7
,, Journal No. XXXVI:						
Printing, Dispatching, Postages, etc.	322	9	2			
Less Received from Advertisements	116	10	0			
				205	19	2
,, Surplus for year 1951				2,176	5	4
				£2,807	3	8

	£	s.	d.	£	s.	d.
By Subscriptions:						
Family Members	415	10	2			
Ordinary Members	1,964	11	9			
Associate Members	253	11	2			
				2,633	13	1
,, Donations				38	0	0
,, Interest on Investments				117	15	1
,, Sale of Journals, etc.				17	15	6
				£2,807	3	8

BOOK REVIEW

Michael Haworth-Booth, F.L.S. *The Hydrangeas*, pp. viii + 185. 21 plates (black and white). London: Constable & Co. Ltd., 1950 Publisher's price 25*s*.

All garden lovers, and especially hydrangea enthusiasts, will welcome this book. The author is well known for his interest in, and love of, the hydrangeas, and shrubs generally; this book is the result of many years experience in growing, studying and 'sorting out' the hydrangeas. As the author is also well known for his fine photography, it seems a pity, therefore, that all the plates are right at the end of the book (with the exception of course, of the frontispiece).

After the 'Introduction' the book is divided into ten chapters: I—The History of the Hydrangeas. II—The Species of Hydrangea. III—Hydrangea macrophylla Garden Varieties. IV—Hydrangea serrata Garden Varieties. V—The Breeding of Hydrangeas. VI—The Cultivation of the Garden Varieties. VII—Propagation, Forcing and Pot Culture. VIII—Diseases and Pests. IX—Hydrangeas as Garden Shrubs. X—Hydrangeas for Tubs and Vases and as Cut Flowers.

The historical and botanical chapters make extremely interesting reading, and bring together all the hitherto scattered data on the subject. All the known wild hydrangeas—over eighty species, ranging from the Himalayas, China, Korea, Formosa, Japan, North America, South America and the Philippines—are described.

A great deal of research has been carried out by the author on the question of the origin of the present-day race of garden hydrangeas, particularly the mopheaded type ('Hortensias')—with which we are so familiar in gardens in South Africa—and the charming 'Lacecaps'. In the hortensia section are listed about 300 named varieties; occupying some twenty-six pages in the book, they are tabulated alphabetically with full descriptions, breeder's name, date of introduction, awards, etc.

Propagation and cultivation are expertly dealt with. Needless to say very informative explanations are given in the question of pH values of the soil in relation to 'blueing' and the readiness with which certain varieties can be induced to give blue flowers, compared with those which are more obdurate. Stress is laid on the important part played by *both* aluminium and iron in the well-being of the plant.

The fascinating chapter on breeding will interest both the amateur and the professional grower as, in spite of the great number of varieties in the hortensia section which have been produced, Mr. Haworth-Booth points the way where important improvements and new developments are possible.

Although written for the grower in the Northern hemisphere this book, which is the first to appear in the English language, as a specialist work on the hydrangeas, must have a very wide appeal.

H. F. Werner.

JOURNAL OF THE BOTANICAL SOCIETY: BACK NUMBERS

The following Parts are obtainable at the prices shown. The principal contents are mentioned below: each part also contains full-size Plates, News and Notes, Reports, etc.

Price to Members of the Botanical Society 1/6; to non-Members 2/6:—

Part	VIII.	South African Geraniaceae.	L. Bolus.
		The Cultivation of Geraniaceae.	J. W. Mathews.
		Medicinal and Aromatic Plants in S. Africa.	R. H. Compton.
		South African Heaths.	L. Bolus.
		The Cultivation of Heaths.	J. W. Mathews.
,,	XIII.	Notes on Mesembrianthemum and Allied Genera.	L. Bolus.
		South African Succulents.	J. W. Mathews.
		Alien Trees at Kirstenbosch.	R. S. Adamson.
,,	XXI.	Aloe Marlothii: Some Forms and Hybrids.	G. W. Reynolds.
		Lawn Grasses on Trial at Kirstenbosch.	J. W. Mathews.
		How to form a Garden Library.	L. B. Creasey.
		South African Conifers for Garden Use.	J. W. Mathews.
		From New York to Kirstenbosch and Back.	S. V. Coombs.
,,	XXII.	South African Succulents at Kew.	Sir Arthur Hill.
		An Old Cape Frontier.	E. A. Walker.
		Our Wild Flowers and Their Protection.	F. Guthrie.
,,	XXIII.	Economic Plants at Kirstenbosch.	F. W. Thorns.
		Garden Gladioli—Their Origin and History.	L. B. Creasey.
		Growing Plants from Seeds.	S. G. Fiedler.
		Letters from an Early Cape Botanist.	M. C. Karsten.
,,	XXIV.	(Silver Jubilee Number.)	
		Kirstenbosch. (Broadcast 9 September 1938.)	R. H. Compton.
		Nature Study at Kirstenbosch.	M. E. Johns.
,,	XXV.	Buildings at Kirstenbosch.	J. W. Steytler.
		Parks and Publicity.	F. R. Long.
,,	XXVI.	The South African Genera of the Haemodoraceae.	W. F. Barker.
		Humus and Soil Fertility.	F. W. Thorns.
		Mountains and Their Vegetation.	R. H. Compton.
,,	XXVII.	Weeds: The 'New' Cape Flora.	R. S. Adamson.
		Drug Plants.	F. W. Thorns.
,,	XXVIII.	The Herbarium of the National Botanic Gardens, Kirstenbosch.	R. H. Compton.
		Nature Study in the Forest at Kirstenbosch.	M. E. Johns.
,,	XXX.	Cultivation of Bulbs from the Winter Rainfall Area of the Cape.	F. W. Thorns.
		Report on the Silver Leaf Tree Borer.	F. G. C. Tooke.
		The Magic of the Cycad Forest.	F. Milner.
		Report on the Sub-Committee on Veld Conservation, August, 1944.	
,,	XXXI.	Cape Annuals for the Garden.	F. W. Thorns.
		A Plea for South African Trees.	D. R. D'Ewes.

NEW MEMBERS OF THE BOTANICAL SOCIETY 1951

(LIFE MEMBERS: Family Members: Ordinary Members: *Associates.*)

The star (*) indicates Members who are also Subscribers to the Wild Flower Protection Section.

In case of any inaccurancy in the following list it is requested that notification should be made to the Hon. Secretary, Botanical Society of S.A., Kirstenbosch, Newlands, C.P.

A.

Adams, Sir T.
Adamson, Mrs. P. C.
Andersen, E.
Andersen, F., Jnr.
Anderson, Mrs. S. L.
Armstrong, J. J.
Arno, Mrs. V.
Ashworth, Mrs. M. G.
Association of Scientific Workers

B.

Ball, Mrs. A. I.
Barr, W. A.
*_Barkhuizen, B. P._
Barlow, Mrs. C. S.
Beare, Dr. J. M.
*Bell, E.
Bell, H. L.
Bell, Mrs. R.
*Bengough, Mrs. A. D.
Berger, M. S.
*Bergh, Lt.-Col. F. E.
Bergville Garden Club
Berry, Dr. G. L.
Binks, Mrs. S. J.
Bird, Dr. A. V.
Blok, A. H.
BODDAM-WHETHAM, A. D.
BODDAM-WHETHAM, E. T.
Bollom, I. B.
Bond, Lt.-Col. I. R. B.
*Boocock, Mrs. M.
Botha, P. W.
Bowden, D. R.
Bowden, E. G.
*Bower, Mrs. C. A.
Boyce, W. J.
Boyd, Mrs. H. C. W.
Bozas, D.
Brown, Mrs. M. E.
Bruce, Mrs. A.
Bryer-Lloyd, Mrs. N. H.
Buckingham, Major P. H. H.
Buenos Aires Garden Club
Burger, B. N.

C.

Calder, Mrs. E. H.
Campbell, Miss K.
*Cardwell, J. M.
Carp, B.
Cartwright, Col. H. A.
Clark, Mrs. I. H.
Clarke, A. H.
Clemon, Lt.-Col. H. W.
Coalter, Mrs. A.
Cohen, Dr. M. M.
Cohen, Mrs. S. J.
Coley, Mrs. C. F.
Conradie, J. D.
*_Cook, Mrs. H._
Cookson, K.
Cooper, Miss S.
Cornwall, Mrs. R.
Couper, Mrs. L.
Crofton, Brig. and Mrs. R.
Cuthbert, Mrs. W.

D.

Dale, W.
Dalgleish, J.
*Davis, Mrs. F. M. Mc.
Davis, G. A.
De Villiers, P.
*Delap, Mrs. H. A.
Delap, H. A.
*Der Kinderen, J. G.
Dixon, L. G.
*_Dose, Mrs. W. K._
Douglas, S.
Du Preez, Mev. A.
Du Toit, D. E.
Du Toit, J.
Du Toit, S. R.
Dyke, Mrs. C.

E.

Edley, N. G.
Edwards, Mrs. H.
Eivrard, Miss H. S.
Elion, Dr. M.
Elliott, S. S.
Erasmus, Mrs. H. F.
Eynon, Miss K.

F.

Faure, M.
Fawcus, Mrs.
*Filmer, H. J.
Findlay, Mrs. C. D.
Florida Forest Service
Foghill, Miss M.
*Forsyth, Miss F. C.
Foster, T. W.
*_Fountain, Mrs. P._
*Frankel, Mrs. M. C.
Fridjohn, Mrs.
Frykberg, Mrs. T.
Furner, Mrs. C. M.

G.

Galvin, W. P.
GARLAND, MISS M. M.
*Garrood, G. W. T.
Gayner, F. C. H.
Gear, Mrs. M. M.
GENEQUAND, MISS M. E.
Gering, Mrs. E.
Gersohn, Mrs. H. E.
Gerstel, H.
Gilbert, Mrs. G. N.
Gilbert, J. C.
*Gilbert, Dr. W.
Gilbert, Mrs. W. H.
Gilkison, S. V.
Gingold, Mrs. E. L.
Glendirk Estate (Pty.) Ltd.
Good Hope Seminary School
Gosschalk, M.
Gough, Mrs. E. W.
Goulding, Mrs. M. E.
Graff, Mrs. A.
*Granat, Dr. L.
Gredler, J. G.
Green, Mrs. A. B.
Gregg, Mrs. G. L.
Greig, J. B.
*Griggs, Miss J. J.
Guinness, Mrs. F. R.

H.

Hackner, Mrs. R.
*_Haley, G. A._
*_Hall, Miss A. E._
Hamilton, Mrs. J.
Hanbury, Miss E. J.
Hancock, H. P.
Hanes, Mrs. R.
Hansford, Mrs. M.
Harradine, Miss W.
Hart, Mrs. G. J.
Hartley, Mrs. R. W.
Hayter, Mrs. N. K.
Hedegaard, S. M.
Hewat Training College
Heyer, G.
Hillmer, Mrs. W. J.
Hindson, Mrs. B. R.
Hitchcock, Mrs. P.
Hoffman, A. M.
Holness, E.
Horwood, Mrs. A. J.
Houghton, Mrs. B. K. H.
Hughes, Mr. and Mrs. T. P.
Hulett, R. L.
Hull, Mrs. F.

I

Ingermann, Mrs. I.
Ingwersen, Mrs. C. M.
Irvine, Miss A. C.
Isaacs, Mrs. C.

J.

Jacobs, H. G.
Jacobsz, R.
James, Mrs. C. A.
James, R.
*_Jansen, J. G._
Jardins des Vilmorin
Jenkins, Miss L.
Jesse, Mrs. K. M. R.
*Johnson, Mrs. M. C.
Johnston, L. P.
Jordaan, Mev. C. F.
*Joubert, Mrs. E. M.

K.

Karabus, I.
*Kendall, Mrs. A. F.
Kershaw, Mrs. E.
Kent, P. L.
*Kerbel, Mrs. R.
Kervyn-de-Meerandre, V.
*King, A.
King George T.B. Hospital
Kirby, W. T.
Kitchener, Mrs. L. A.
Koch, Miss D.
Kok, I. B.
Kreutzberg, H.

L.

Lamberg, E. D.
Lamberth, E.
LAWN, J. G.
Leese, Lady O.
Leese, Sir O.
Leistner, O. A.
*Leopold, F. W.
*_Levitt, C. B._
Lewis, E. A. L.
Lidgett, Mrs. G. G.
Linder, Mrs. R. E.
*Little, Mrs. M. A.
Lloyd, Col. C. G.
Louw, Mrs. P. A.
Lyle, Mrs. M.

M.

McAlister, Mrs. I. L.
McCarthy, R. M.
*McEwan, Mrs. A. G.
McLaughlin, A. C.
Macintosh, Mrs. K.
Mackenzie, G. W.
MACKEURTON, MRS. W.
*Mackintosh, Lord
Manning, J. D.
Manning, Mrs. J. D.
Marais, Mej. H.

*Marloth, Mrs. M. M.
MARLOTH, DR. R. H.
Mather, J.
Meller, Mrs. I. J.
Menjies, J. A. B.
Michel, B. H.
Mokken, A. H.
*Molteno, H. A.
Moore, H. L.
Moore, Mrs. M. I.
Morley, R. H.
Morrison, Mrs. G.
Morson, Mrs. M.
Murname, Mrs. S.
Murphy, Mrs. H. E.
*Myers, I. R.

N.

National Cactus & Succulent Society, Stafford Branch
Neuman, Mrs. E.
NEWBERRY, C. R.
Newland, E.
Nicholson, Mrs. J. B.
Noyce, Mr. G.
*Osler, J. L.

P.

Packer, Mrs. M.
*Page, H. S. H.
Palmer, Mrs. M. A.
Parlevleit, Mev. C. Y. M.
*Perks, Mrs. S. M.
Phelps, Mr. & Mrs. T. J.
Phipps, Mrs. E. D. L.
*_Pocock, Mrs. D. R._
Pollak, E. R.
Pollard, J. K.
Poore, Mrs. D. M.
*POURIE, MRS. E.
Power, Mrs. G.
Power, G.
Pretorius, Mrs. H.
*Pretorius, S. W.
Priest, Mrs. E. G.
Pruett, M. H. R.

R.

*Ratcliffe, Mrs. A.
Ramke, Mrs. W. S.
Ray, J. H.
Rech, E.
Retief, J.
Ritson, Lady K.
River, Garden and Arboretum
Robertson, Mrs. L. M.
Robinson, Mrs. E. A.
Robinson, H. I.
Rogaly, J. M.
*Rolle, H. G. P.
Rooney, R. A.
Rosenberg, Mrs. N. E.
*Rossouw, G. J.
Roux, D. H.
RYCROFT, C. C.

S.

Sacks, Mrs. S.
*Sanders, V. A.
Satterthwaite, Mrs. M.
*Schaurie, Dr. W. T.
Scheltema, C. H.
Schmerenbeck, Mrs. A. M.
Schmitz, T.
School for the Blind
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OBJECTS:

(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organize shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members of botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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OF SOUTH AFRICA

Edited by R. H. COMPTON
M.A., F.R.S.S.Af., Director of the
NATIONAL BOTANIC GARDENS

Part XXXVIII 1952

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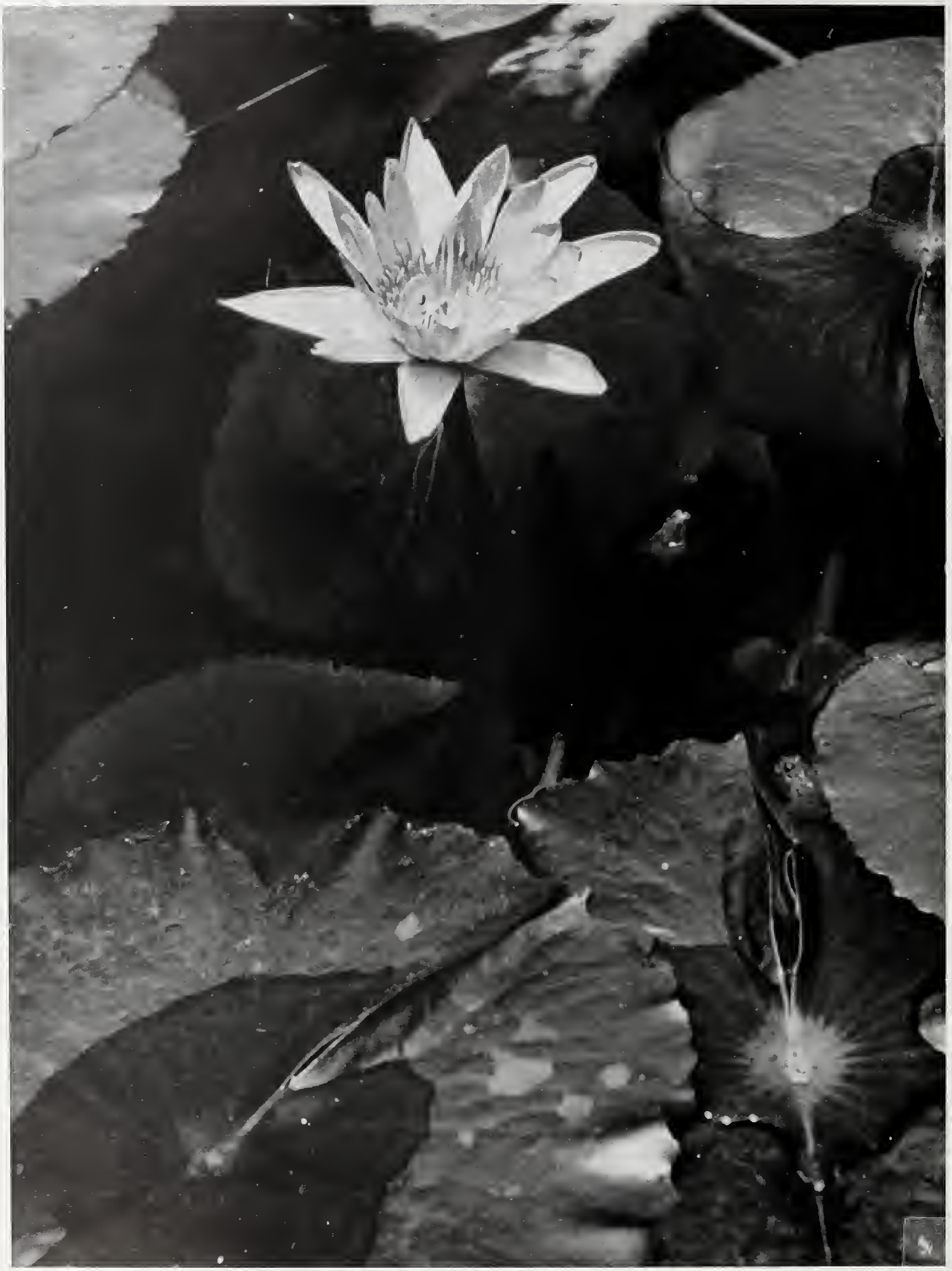

[*Photo:* M. Heginbotham

PLATE I. *Nymphaea capensis*, the Blue Water Lily at Kirstenbosch.

The Journal of the Botanical Society of South Africa

EDITED BY R. H. COMPTON.

PART XXXVIII 1952

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News and Notes

THE Secretary of the Botanical Society is grateful to all those Members who have assisted her by prompt payment of their subscriptions. Towards those others whose delays have necessitated the expenditure of thought, time and postage in sending reminders her feelings are perhaps not quite so cordial! A little thoughtfulness and promptness in this matter is all that is required to keep her happy.

* * *

Mrs. Julia F. Solly, whose death took place on 8 July 1953, at the age of 91, was one of the earliest Members of the Botanical Society. Her name is connected with Kirstenbosch in a special way as the founder of the Edward Muspratt Solly Scholarship, attached to the National Botanic Gardens. This was established by Mrs. Solly in 1925 in memory of her son, whose untimely death had robbed the country of an ardent naturalist. The income of the Scholarship, originally fixed at £100 p.a., was to be available to assist a worthy student to gain botanical experience and training at Kirstenbosch. During the twenty-eight years since the Scholarship was founded there have been seventeen holders, some for one year, some for two or part of two years. They have come to Kirstenbosch from nearly all the universities and university colleges—Cape Town, Witwatersrand, Rhodes, Stellenbosch, O.F.S., Huguenot—most of them have lived here and gained an abiding interest in the Gardens and in botanical research, as well as contributing in their own ways to the welfare of the institution. The majority have, naturally, engaged in plant systematics and herbarium work, for which the Kirstenbosch Herbarium is an admirable training ground under Miss W. F. Barker (herself a Solly Scholar), who has been instructor and guide to most of the recent Scholars. Many have subsequently taken important positions in other institutions, for which their training has specially fitted them. The value of Mrs. Solly's benefaction, both to individuals and to South African botanical work, is very great.

* * *

Owing to the general fall in money values, the income of the Solly Scholarship is worth much less than at the time of its establishment, and the Trustees have taken steps to restore its value to some extent by (1) providing residence at Pearson House, Kirstenbosch, free of rent to the scholar and (2) by establishing a Supplementary Scholarship Fund from which it will be possible to augment the stipend as time goes on. By these means it should be possible to prolong the usefulness of the Scholarship indefinitely.

* * *

Mrs. Solly, during her lifetime, had executed a further deed of gift of £1,000 in favour of the National Botanic Gardens subject to a life interest for her only daughter, Mrs. Gordon.

* * *

The Smuts Memorial Fellowship was established on the basis of the money collected by the Cape Town Smuts Birthday Fund: this being placed in charge of a committee representing the Trustees of the National Botanic Gardens and the Council of the University of Cape Town. The Fellowship is for botanical research, especially in systematics and plant-geography, and is tenable at Kirstenbosch or the University or both. The first appointment of a Fellow has been made for 1953-4, namely Miss Frances M. Leighton (Mrs. W. E. Isaac), B.Sc. (Rhodes), who was formerly on the staff of the Bolus Herbarium: the proposed subject of her study being the genus Agapanthus, with certain other genera (Pelargonium, Limonium) as opportunity offers. Miss Leighton is making extensive use of the facilities for cultivation at Kirstenbosch and of the large amount of Agapanthus material already in the Gardens.

* * *

Professor W. Edwyn Isaac, B.Sc., Ph.D., F.R.S.S.Af., has been appointed to succeed Professor R. S. Adamson as Harry Bolus Professor of Botany in the University of Cape Town. Dr. Isaac came to Cape Town in 1933 from the University of South Wales as the first holder of the recently established Thomas Smartt Memorial Scholarship. He was on the staff of the Government's Low Temperature Research Laboratory for several years, after which be became Lecturer and then Professor of Botany at Rhodes University College, Grahamstown. The Botanical Society may congratulate him on his appointment, and may anticipate valuable services from him as a member of its Council.

Queen's Coronation Medals 'issued as a personal souvenir from Her Majesty to State servants and other specially selected persons in Commonwealth countries' have been awarded to Mr. W. Duncan Baxter, Chairman of the Board of Trustees, and to Professor R. H. Compton, Director, of the National Botanic Gardens.

* * *

Sales of *Wild Flowers of the Cape of Good Hope*, by E. Garrett Rice and R. H. Compton, continue steadily, and it has been possible to repay about two-thirds of the loan received from the Department of Education, Arts and Science. The Publication Committee has placed sales in England in the hands of Messrs. Wheldon & Wesley Ltd., 83/4, Berwick Street, London, W.1, and in non-sterling countries the book is sold by Messrs. Chronica Botanica, Waltham, Mass., U.S.A. It can be obtained through any South African bookshop or direct from the Botanical Society's office at Kirstenbosch. It makes an admirable present or presentation volume, and Members of the Botanical Society are specially invited to use it in this way and so to help the Society at the same time.

* * *

Dr. G. W. Reynolds, whose great book *The Aloes of South Africa* was such a signal contribution to the study of our flora, planned to extend his study of the genus Aloe to the whole of Africa. In 1952 he made a successful excursion to Northern and Southern Rhodesia, Nyasaland, Tanganyika and Kenya, and in 1953 he has gone still further afield, into northern Kenya and southern Ethiopia. Official obstructiveness partly interfered with the completeness of the latter trip; but on both occasions he was able to check old records and make new, visit type localities, collect material, photograph and describe, and he is publishing interesting *novitates* in the *Journal of South African Botany*. Next year he plans to go the whole length of the Congo as far as Juba and back down the eastern side of the Great Lakes, and there is a possibility also of a visit to Madagascar. Everyone must wish him the success to which his continued energy and enthusiasm, so well displayed by his first book, entitle him.

* * *

The Kirstenbosch office would be glad to receive copies of the Annual Report of the National Botanic Gardens for the years 1916-20, in order to enable it to complete a set. Perhaps some reader may have them available.

During the recent royal visit to Southern Rhodesia, Queen Elizabeth the Queen Mother expressed her willingness to accept a copy of *Wild Flowers of the Cape of Good Hope*, and arrangements were accordingly made for the presentation of a copy of the limited edition. A letter was subsequently received by the Chairman of the Botanical Society from the Private Secretary to the Queen Mother (2 July 1953) as follows:

> 'I am commanded by Queen Elizabeth the Queen Mother to express to you Her Majesty's most sincere thanks for the beautiful copy of "Wild Flowers of the Cape of Good Hope" which you have forwarded through His Excellency the Governor for Her Majesty's acceptance.
>
> 'I am to tell you how greatly Her Majesty appreciated the kind thought which brings this from you and from the Botanical Society of South Africa.'

* * *

Her Majesty Queen Elizabeth the Second having graciously intimated her willingness to accept from the Botanical Society a copy of *Wild Flowers of the Cape of Good Hope*, a specially bound and inscribed volume is being prepared for presentation at a suitable opportunity. The inscription, which is signed by artist and author, reads as follows:

> 'Presented to Her Most Gracious Majesty, Queen Elizabeth II, by the Council of the Botanical Society of South Africa in loyal tribute and with honoured memories of Her Majesty's visit to Kirstenbosch in 1947.'

* * *

The remarks made in the last issue of the Journal about the commercial value of indigenous plants, for whose introduction to cultivation and popularization Kirstenbosch is primarily responsible, are illustrated by a recent show in a Cape Town store—'Protea Glory on Show'—accompanied by large newspaper advertisements of the sale of plants, for delivery next autumn. The prices of these plants range from 5*s*. upwards, several being priced at 15*s*. and *Leucospermum reflexum* at £1 1*s*. per plant (minimum quantity two plants) plus packing and carriage. And who will say that the pleasure which may be given by such plants is not worth the expenditure?

* * *

And who will not realize that a Member's subscription to the Botanical Society, with its privilege of obtaining hand-picked seeds of these marvellous plants, is not well worth while, even on the basis of 'what one gets out of it'—quite apart from the pleasure of supporting the institution which has made this wealth of beauty available.

* * *

The discovery that it is possible to extract from species of Testudinaria (Dioscorea) one of the basic substances, diosgenin acetate, used in the manufacture of cortisone, threatened the wasteful and destructive exploitation of *T. elephantipes* in the Cape Province, where this remarkable plant is protected by law. Permits for the collection of reasonable quantities of the plant, as dictated by humane considerations, were granted by the Provincial Administration, and carried conditions whereby wholesale destruction could be prevented. The rapid fall in the price of cortisone, coupled with the discovery of other sources of the basic material, brought the exploitation of Testudinarias in the Cape Province to an end. In the Transvaal, however, where the allied species *T. sylvatica* is not at present protected, exploitation is proceeding unchecked, and is causing anxiety in official quarters as well as to all those to whom the wasteful spoliation of our unique flora and fauna is anathema.

* * *

The raising of South African succulents from seed and cuttings is an interesting occupation, with many attractions and few difficulties, and gives scope to gardening instincts in the most limited amount of room. An article in this Journal by Mr. H. Hall, who is in charge of the succulent collections at Kirstenbosch, gives the fruit of his great experience in this matter. Seeds of a great many of the most attractive small succulents (and some of the bigger ones) are now available to Members of the Botanical Society, from Kirstenbosch and Worcester, and Mr. Hall's advice will enable them to be used to the best advantage.

* * *

Great progress has been made at the Karoo Garden since its transfer to Worcester seven years ago. In this Journal Mr. J. Thudichum, the Curator of the Garden, gives an account of the Garden and its early history, the successful development of which, in difficult but much more practicable conditions than at Whitehill, has been due to his single-handed exertions.

* * *

The genus Pelargonium is so familiar the world over in the form of the garden geraniums—perhaps the most generally useful of all garden plants—that their exclusively South African origin is apt to be forgotten. In fact, people who are most enthusiastic about our unique and unsurpassable wild flowers are quite liable to forget Pelargonium: it hardly ever appears, for instance, in our Wild Flower shows. In this Journal, Miss Frances Leighton writes something on the early history of the cultivation of Pelargoniums and the way in which they became one of South Africa's chief contributions to the gardens of the world.

Miss Leighton's article is illustrated by reproductions of six of the illustrations of Pelargoniums grown in Europe in early printed books.

* * *

Our frontispiece, by Miss M. Heginbotham, is a study at Kirstenbosch of the South African Blue Waterlily, *Nymphaea capensis*, and shows the exquisite blue flower rising above the water, the unwettable upper surfaces of the leaves—and a frog in half-hiding among them.

* * *

In Plate 4 we reproduce four of Mr. Hall's photographs of 'unusual' succulent plants.

(1) The tops of two plants of *Pachypodium namaquanum*, the Bushmanland 'Half-Mens', showing the crowns of curiously waved leaves and the clusters of rarely seen brownish tubular flowers. Photographed in the wild state at Uranoep, August 1952.

(2) *Fenestraria aurantiaca*, one of the most remarkable of the 'window plants', photographed in natural surroundings at Brandkaross, 1953.

(3) *Hoodia ? Burkei* with its numerous leather-like flowers and two-horned fruit, photographed in the Ceres Karoo in November 1952.

(4) *Stapelia Herrei* collected at Uranoep in August 1952, in flower at Kirstenbosch in November 1952.

* * *

The Trustees of the National Botanic Gardens, in conjunction with the Council of the University of Cape Town, have appointed Dr. H. Brian Rycroft as Director of the National Botanic Gardens, Kirstenbosch, and Harold Pearson Professor of Botany in the University of Cape Town as from 1 January 1954, in succession to Professor R. H. Compton who is retiring.

Dr. Rycroft, who is 34, is an M.Sc. (with distinction) of the University of Natal, a B.Sc. in Forestry of the

University of Stellenbosch and a Ph.D. in Botany of the University of Cape Town. In taking up his new post at Kirstenbosch he relinquishes the posts of Forest Research Officer and District Forest Officer for the Jonkershoek Forestal District: he has also carried out the duties of Silvicultural Research Officer for the Cape Province and part-time Lecturer in Forestry at the University of Stellenbosch.

Dr. Rycroft is already well known at Kirstenbosch. He is a member of the Council of the Botanical Society and of its Wild Flower Protection Committee, and has been a correspondent of the Herbarium for several years.

* * *

Popular interest in the flora of Southern Rhodesia will be greatly stimulated by a book entitled *Rhodesian Wild Flowers*, recently published by Messrs. Longmans Green for the Trustees of the National Museums of Southern Rhodesia (price 42*s*.). The author is R. A. S. Martineau and the thirty-four colour plates are charmingly drawn by Mrs. Margaret H. Phear. The scope of the book is limited, woody plants as well as grasses, etc., being omitted: on the other hand several introduced species are included. The result is a book which will answer a great many questions put by intelligent people who wish to know something about the common flowers of their country. Publication was financed by the Thomas Meikle Trust, and the book is the first of a promised series on aspects of Rhodesian Natural History.

* * *

A smaller book on a similar subject, also published by Longmans as one of their Field Handbooks, is *Some Flowers of the Bush* by Joan Hoyle, who provides text and line drawings, four colour plates being added by Joyce Farrall.

It is an attractive little publication, priced at 6*s*., and will perhaps lead its readers on to purchase the Martineau-Phear book, and so to an increasing acquaintance with a flora about which very little accessible literature, popular or scientific, so far exists.

* * *

The first booklet of Protected Wild Flowers of the Cape Province was published by the Cape Provincial Administration in 1952 and was a popular success, selling freely at 2*s*. 6*d*. per copy. In April 1953 the Administration published Part 2, containing a further sixty-six plates in colour, drawn from life by Mrs. Maytham Kidd, and selling at the same price. As in the first part, the majority of the subjects depicted were provided by the National Botanic Gardens. Part 2 contains a considerable number of wild flowers from the Eastern Province, as well as several succulents from the Karoo and Namaqualand and many Western Province plants. Part 3 is now in preparation by the Department of Nature Conservation, and will also include many Eastern Province subjects.

The Administration deserves cordial thanks for this method of publicizing the Wild Flower Protection Regulations, and at the same time producing an attractive set of pictures of representatives of our flora in convenient pocket form.

* * *

A much needed enlargement has been made to the Botanical Society's office at Kirstenbosch, and the Secretary now has adequate storage space as well as room for her files and necessary furniture. The cost of the addition has been defrayed from the Bernard Price bequest.

* * *

The publication of John Acocks' map and memoir on the Veld Types of South Africa represents a noteworthy advance in the study and recording of the natural vegetation of the Union. The map, itself a remarkable technical achievement, is the result of an enormous amount of travelling, collecting and observing, with an attention to detail never before attempted. The author has his eye on the possibilities of human uses for the different types (hence the word veld rather than vegetation); he also realizes the mess that human uses have made of the veld in the past 300 years, and prophesies the black future which awaits the continuation of this mismanagement. His map and the smaller scale retrospective and prophetic maps in the memoir state to-day's position clearly and objectively: they will have great value in future as a means of ascertaining whether man's assistance in the destructive and vengeful aspects of Nature has continued, or whether wise conservation measures have checked the eastward march of the Karoo with desert on its heels.

* * *

The republication of Burchell's *Travels in the Interior of South Africa* by the Batchworth Press (in a limited edition of 1,250 copies) is an event of great interest. Burchell was the greatest and most reliable of all South African travellers, but his two volumes published in 1822-4 are rare and inaccessible to most people. The reprint is admirably done, with all the plates, some of them reproduced in colour, but without the large folding map. Taken together with the publication of the 'Catalogus Geographicus' in the *Journal of South African Botany*, and with the late Helen McKay's work on his manuscripts and drawings in the Gubbins Collection at the University of the Witwatersrand, we are to-day in a favourable position to judge the great importance of Burchell's travels and investigations, both to the history of the Cape and to the study of its flora and fauna.

* * *

Here are two quotations from Burchell's first volume: 'If in the vicinity of Cape Town, a well ordered botanic garden of sufficient extent, were established, for the purpose of receiving plants which might casually, or even expressly, be collected in the more distant parts of the colony, the sum of money required for it would be but trifling, in comparison with the advantages which science, and the public botanic gardens of England, would derive from it' . . . (p. 23). 'Our walk conducted us to a high part of the hill of Wynberg, which overlooks Kerstenbosch, a beautiful estate belonging to Government. The view from this spot and, indeed, all the scenery around, is the most picturesque of any I had seen in the vicinity of Cape Town. The beauties here displayed to the eye could scarcely be represented by the most skilful pencil; . . . but at this hour, the harmonious effects of light and shade with the enchanting appearance of the foliage in the foreground, and the tone of the middle distances, were far beyond the painter's art. . . . The last beams of the sun, gleaming over the rich, varied and extensive prospect, laid on the warm finishing lights, in masterly and inimitable touches' (pp. 51-2).

Burchell would have rejoiced, one thinks, if he could have seen the dream of his first paragraph fulfilled in the setting of his second, in the shape of the National Botanic Gardens of South Africa.

* * *

> 'I remember M. telling me that the Waratah was the only foreigner allowed at Kirstenbosch by reason of its being a Protea. This is very interesting because it may be the means of preserving the Waratah for posterity—for I venture to think that it stands a very good chance of becoming extinct in Australia. When G. first went to live at Kuring-gai the bush used to be ablaze with Waratahs, and by the time we left hardly one was to be seen. The same applies to this district. They have been ruthlessly butchered, goodness knows what for since those people who do it can't possibly have any appreciation for the beautiful things, which anyway look their absolute best in the bush. The native rose is all but extinct, and I am afraid the Waratah stands a chance of following suit. No doubt a certain amount will be cultivated, but the sight of it in its native glory, with its bush setting, will, I am afraid, become a thing of the past.'

The above is an extract from a letter from a correspondent in Australia. Evidently the same desolating prospects of extermination faces some of the most beautiful and characteristic plants of Australia as it does those of South Africa.

* * *

We regret to record the death of:

Mr. W. N. B. Hardcastle in 1952. He was Assistant Secretary of the Transvaal Horticultural Society and gave great assistance in publicizing the Botanical Society in Johannesburg.

Mrs. M. H. Moss in October 1953. She was the widow of the late Dr. C. E. Moss, first Professor of Botany in the University of the Witwatersrand; she was Senior Lecturer in Botany and Curator of the Moss Herbarium in the University until her retirement in 1950.

Mrs. M. L. de Castilla on 31 March 1953. She was a member of the Botanical Society for many years, and in her will she bequeathed £100 to the National Botanic Gardens.

* * *

Recognition of the work of the National Botanic Gardens has been given by the Royal Horticultural Society in the award to the Director of a Veitch Memorial Gold Medal. It is believed that this is nearly if not quite the first occasion on which this medal has been awarded outside the British Isles. The medal was handed by the President of the R. H. S., Lord Aberconway, to Major A. A. Dorrien-Smith, who has many connexions, horticultural and otherwise, with South Africa, and who kindly attended the meeting for this purpose.

Valedictory

THE end of my long tenure of the Directorship of the National Botanic Gardens is approaching, and it is fitting that I should send a message of farewell and thanks to the Botanical Society.

Ever since its foundation forty years ago Kirstenbosch has been regarded with special affection—at first by the few who co-operated with Pearson in its foundation—and as time went on by more and more on account of their growing faith in its ideals and appreciation of its beauty and interest. Many people enjoy their visits to Kirstenbosch: some take it for granted as just one of the many attractions of the Cape; others have some idea of its uniqueness and of the special features of the flora which it displays; others realize, perhaps, something of the thought and work that have been expended on its development and maintenance. But there are some who are willing not only to enjoy and appreciate but who feel that in some way their interest must express itself in a wish to co-operate and to take a personal share in supporting the Gardens; of such is the Botanical Society composed.

Many become members of the Society in the first place for the privileges it gives them; but they remain members, year after year, because one of the things they get out of it is the pleasure of helping in the work of the Gardens.

Members of the Botanical Society make a valuable monetary contribution to the funds of the Gardens; but they do more than this. They testify to an enlightened interest and appreciation in the Gardens, freely and individually given, which is the greatest possible stimulus to those responsible for their management; and they say to governmental authorities that here is an institution which has so great a degree of private voluntary support that it merits adequate public support also.

The Botanical Society was founded at the same time as the Gardens and has increased and developed *pari passu* with them. It has grown steadily from the outset and now numbers about 2,600 members, living in all parts of the Union and in several countries overseas as well. It has contributed ever-increasing amounts to the annual maintenance of the Gardens and has made several special grants from its Life Members' Fund for pieces of development. Its first object was to support Kirstenbosch; later it helped the finances of the Karoo Garden, at Whitehill and then at Worcester; and more recently it has created a special section, of increasing influence, for Wild Flowers Protection. It assists members—and not only members—with literature, information and advice and has secured them special privileges from the Gardens; in this way inculcating a living interest in our flora, its scientific and horticultural value and the need for its conservation. It organizes programmes of lectures, demonstrations, film shows, visits to other gardens, members' gatherings, etc. These activities, flowing naturally from the aims and functions of the Gardens themselves, are of the greatest ancillary value to the Gardens.

It has been my good fortune, as Director of the Gardens for over thirty-five years, to be in close contact with all the activities of the Botanical Society. Both as a member of the Council of the Society and in close relationship with its official work, and as editor of its Journal, I have been privileged to assist in a collateral way with the main purposes of the great institution which has been in my charge.

I cannot adequately express my gratitude, as Director, for the support and interest so generously given by the Botanical Society; nor as an individual, loving the Gardens and all they mean, for the happiness I have had in associating with others who feel the same affection for them. It is a great sadness for me to give up an active part in the Gardens and Botanical Society; but I am cheered by confidence that the future holds great achievement for the Gardens and that the Society will continue to give them the inestimable advantage of its encouragement and support.

Kirstenbosch.
November 1953.

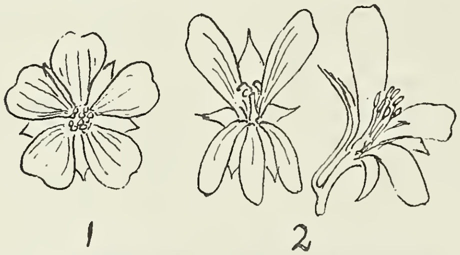
R. H. COMPTON.

Pelargonium—a South African Contribution to World Gardens

By F. M. LEIGHTON

THE name Geranium or Cranesbill has its origin in antiquity, having been used both by Dioscorides and Pliny. As defined by Linnaeus in his Species Plantarum of 1753 it comprised three distinct genera, viz. Geranium proper or Crane's Bill, Pelargonium or Stork's Bill and Erodium or Heron's Bill. These names are descriptive of the shape of the fruit. The genera Pelargonium and Erodium were created by a French botanist, L'Héritier in 1788. The true Geranium is a cosmopolitan genus of which about eight species are native to South Africa. It is seldom cultivated as an ornamental garden plant in South Africa although a number of introduced species and a few species of Erodium as well occur as weeds.

Pelargoniums are distinguished from Geraniums by their irregular flowers, the nectariferous spur which adheres to the pedicel and by the shape of the fruit.



1. GERANIUM 2. PELARGONIUM
(From M. M. Page's plate in the Journal of the Botanical Society, Part VIII, 1922.)

Pelargonium, though largely South African in origin, extends to Madagascar and up the east cost of Africa to Arabia and western India. There are species in Australia and on Tristan da Cunha. From the South African species have arisen all the manifold varieties of Pelargonium and so-called 'Ivy-leafed and Zonal Geraniums' of horticulture.

Some botanical writers of the early nineteenth century insisted on following the usage of Linneaus and declined to accept the new name Pelargonium. Among these was H. C. Andrews whose prolific writing and whose popularity among gardeners of his day have probably had much to do with the persistence of the name Geranium for a large section of the garden varieties of Pelargonium. In the preface to his monumental work on Geranium published about 1820 Andrews says: 'If such generic divisions [i.e. the splitting of Linnaeus's genus into Geranium, Erodium and Pelargonium] were generally adopted, the approach to botanic science would be so choked up with ill-shaped, useless lumber that, like a castle in a fairy tale, guarded by hideous dwarfs, none but a Botanic Quixote would attempt investigation.' The genus Pelargonium is accepted by botanists to-day—quixotic or otherwise.

Among the hardy plants which were collected by early visitors to the Cape and which survived the voyage to Europe was *Pelargonium triste*, a humble denizen of the sandy flats and lower slopes. It is a low growing rather inconspicuous plant which attracts little attention from modern gardeners. Thomas Johnson in his edition of Gerard's *Herball* published in 1633 refers to it as follows: 'There is of late brought into this kingdome, and to our knowledge by the industry of Mr. John Tradescant, another more rare and no less beautifull than any of the former, hee had it by the name of *Geranium indicum noctu ordoratum*; this hath not as yet been written of by any that I know; therefore I will give you the description thereof, but cannot as yet give you the figure, because I omitted the taking thereof the last yeare and it has not as yet come to his perfection. The leaves are larger, being almost a foot long, composed of sundry little leaves of an unequal bigness, set upon a thick and stiff middle rib and these leaves are much divided and cut in . . . they are thicke, green and somewhat hairie: the stalk is thicke and some cubit high; at the top of each branch upon foot stalkes some inch long grows some eleven or twelve floures, and each of the floures consisteth of five round pointed leaves of a yellowish colour with a large blacke purple spot in the middle of each leafe as it were painted, which gives the floure a great deal of beauty; and it also hath a good smell. I did see it in floure about the end of July 1632

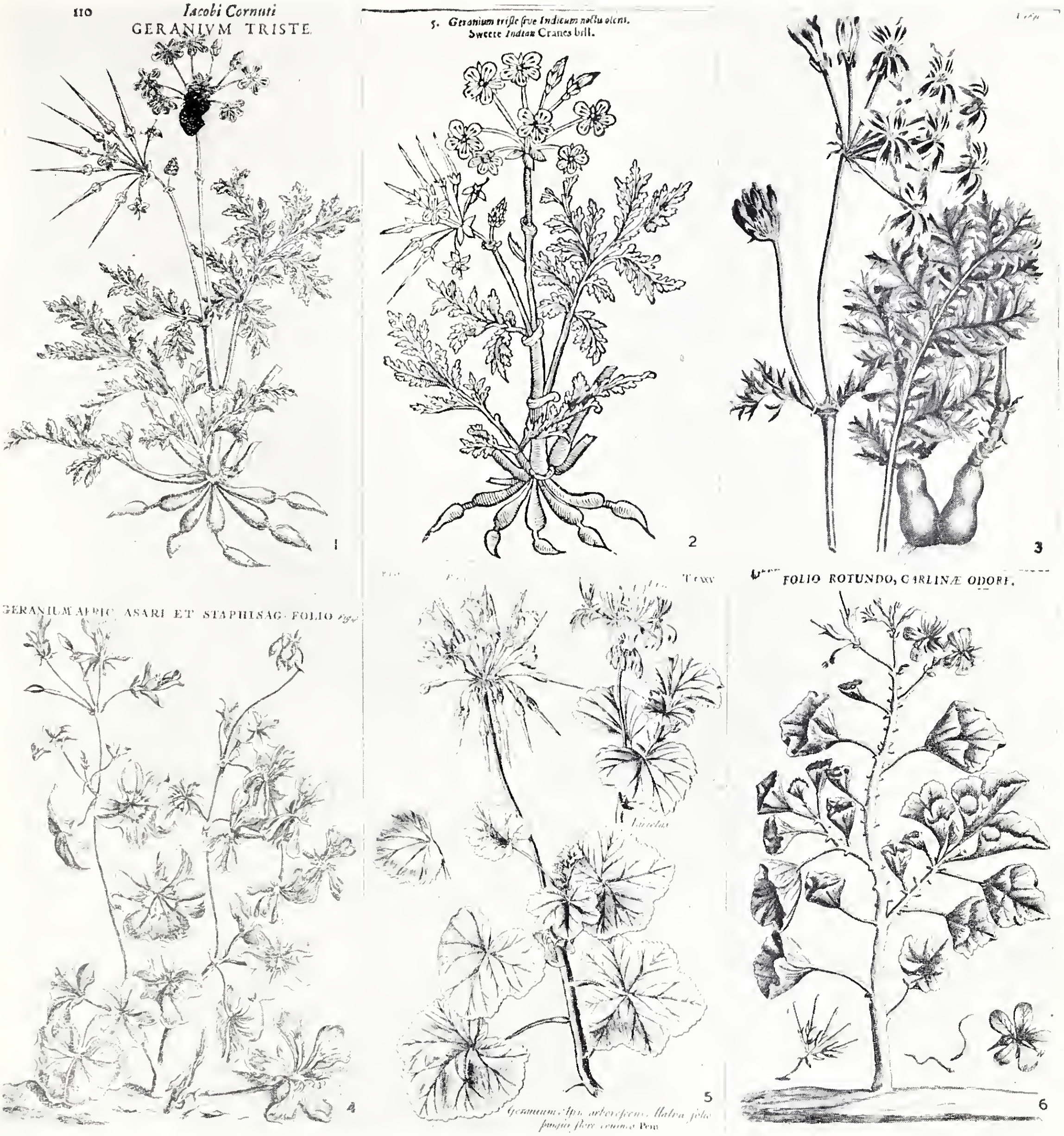

110
Iacobi Cornuti
GERANIVM TRISTE
1
5. Geranium triſte ſive Indicum noctu olens.
Sweete Indian Cranes bill.
2
3
GERANIUM AFRIC. ASARI ET STAPHISAG. FOLIO
4
5
FOLIO ROTUNDO, CARLINÆ ODORE.
6

Plate 2. Pelargonium, Early Engravings.

1. *P. triste*, from Cornut's *Historia*, 1635.
2. *P. triste*, from Parkinson's *Theatrum Plantarum*, 1640.
3. *P. triste*, from Curtis's *Botanical Magazine*, 1814.
4. *P. peltatum*, from Commelin's *Praeludia*, 1703.
5. *P. inquinans*, from Dillenius's *Hortus Elthamensis*, 1732.
6. *P. cucullatum*, from Hermann's *Hortus Lugduno-Batavus*, 1687.

(Reproduced from books in the Bolus Herbarium Library, University of Cape Town, by the courtesy of the Curator.)

being the first time that it floured with the owner thereof. We may fitly call it Sweet Indian Storks bill or painted Storksbill; and in Latin *Geranium Indicum odoratum, flore maculato*.'

The epithet Indicum shows that, as with a number of other Cape plants taken to Europe by ships returning from the East, *Pelargonium triste* was thought to have come from India or the Indies. John Tradescant's garden was in Lambeth, South London.

By 1635 when Cornut's *Historia* was published a picture had been made of the plant, see Pl. 2, fig. 1. Cornut obtained the plant from Rene Morin who appears to have been a celebrated horticulturist in Paris about 1620. Parkinson reproduced this picture of *P. triste* in his *Theatrum Botanicum* or *Theatre of Plants* published in 1640, see Pl. 2, fig. 2. In the text he says: 'The flowers smell very sweete like Muske in the night onely and not at all in the day time as refusing the Sunnes influence but delighteth in the Moones appearance.'

The next reference to this species is in 1668 in Florens Schuyls Catalogue of the Leyden Botanic Gardens. It is listed among the introductions from the Cape of Good Hope. When Paul Hermann published his catalogue of these gardens in 1687 the number of 'geraniums' from the Cape had risen to ten of which he illustrated six, one of which, *P. cucullatum*, is reproduced in Pl. 2, fig. 6. Hermann had visited the Cape about 1672 and tells us that he found *P. cucullatum* growing at the foot of Table Mountain.

From Aiton's catalogue of the plants cultivated at the Royal Botanic Gardens, Kew, published in 1759, we learn that it was introduced in 1690 by Mr. Bentick.

With the advent of the more spectacular and colourful Pelargoniums, *P. triste* seems to have fallen from favour although it was still grown in European gardens. A coloured picture appeared in Curtis *Botanical Magazine* in 1814, see Pl. 2, fig. 3.

During the eighteenth century many of our Pelargoniums found their way into European gardens. Among these was *P. inquinans*, one of the progenitors of the many types of red 'Geranium'. It first made its appearance in literature in the *Hortus Elthamensis* of Dillenius in 1732 and Aiton says that it was cultivated as early as 1714 by Bishop Compton, a bishop of London who seems to have shown a marked interest in Botany in general and in South African plants in particular. He acquired, when on a visit to Holland, a Codex which probably included some of the Claudius drawings from the Cape (or copies of them). The picture from the *Hortus Elthamensis* is reproduced in Pl. 2, fig. 5. On the same plate is a drawing of one of the first hybrids, probably between *P. inquinans* and *P. acetosum*.

The forerunner of the 'Ivy-leafed Geranium', *P. peltatum*, Pl. 2, fig. 4, was introduced into Holland in 1700 by Willem Adriaan van der Stel. The seeds came from the 'region of Heycoon' (probably the country of the Heykom Hottentots in the Langkloof area). Seeds of *P. zonale* were sent in the same year from the 'region of the Attaqua' (now the Robinson Pass area).

With these, and others, established in gardens during the seventeenth and eighteenth centuries hybrids began to arise. To quote again from H. C. Andrews: 'Geraniums . . . whose prolific character seems to know no bounds, in the production of endless seminal varieties, which, Proteus-like appear in ever-varying forms, and for which numerous variations we are indebted to the industrious bee.' Man also took a hand in crossing the species of Pelargonium and a spate of hybrids appeared. A magnificent five-volume work was published by Robert Sweet in the years 1820-30. This consists chiefly of pictures of Pelargoniums of hybrid origin.

Since the beginning of the nineteenth century the Pelargonium has known no rival (except perhaps the Aspidistra!) as a potted plant. It is certainly South Africa's most widespread and well-known ambassador abroad, but how many people realize that the humble parents of these successful plants were among the first emigrants from this country?

The Karoo Garden, Worcester

By J. THUDICHUM
(*Curator*)

THE Karoo Garden was originally established by private benefaction in 1921 at Whitehill, between Matjiesfontein and Laingsburg.

Although ideally situated climatically for the growing and propagating of succulents, the contiguity of the Karoo Garden at Whitehill to the main railway line and its general topography proved major handicaps which made attractive layouts difficult.

In due course, it became evident that Whitehill was too much out of the way. This lack of accessibility was aggravated when the new national road struck a course four to five miles to the north of the Garden.

In 1944 a search was begun by Professor R. H. Compton and myself for a more central site where the Karoo Garden would eventually be transferred. Two suitable sites were found, one near Robertson, the other near Worcester.

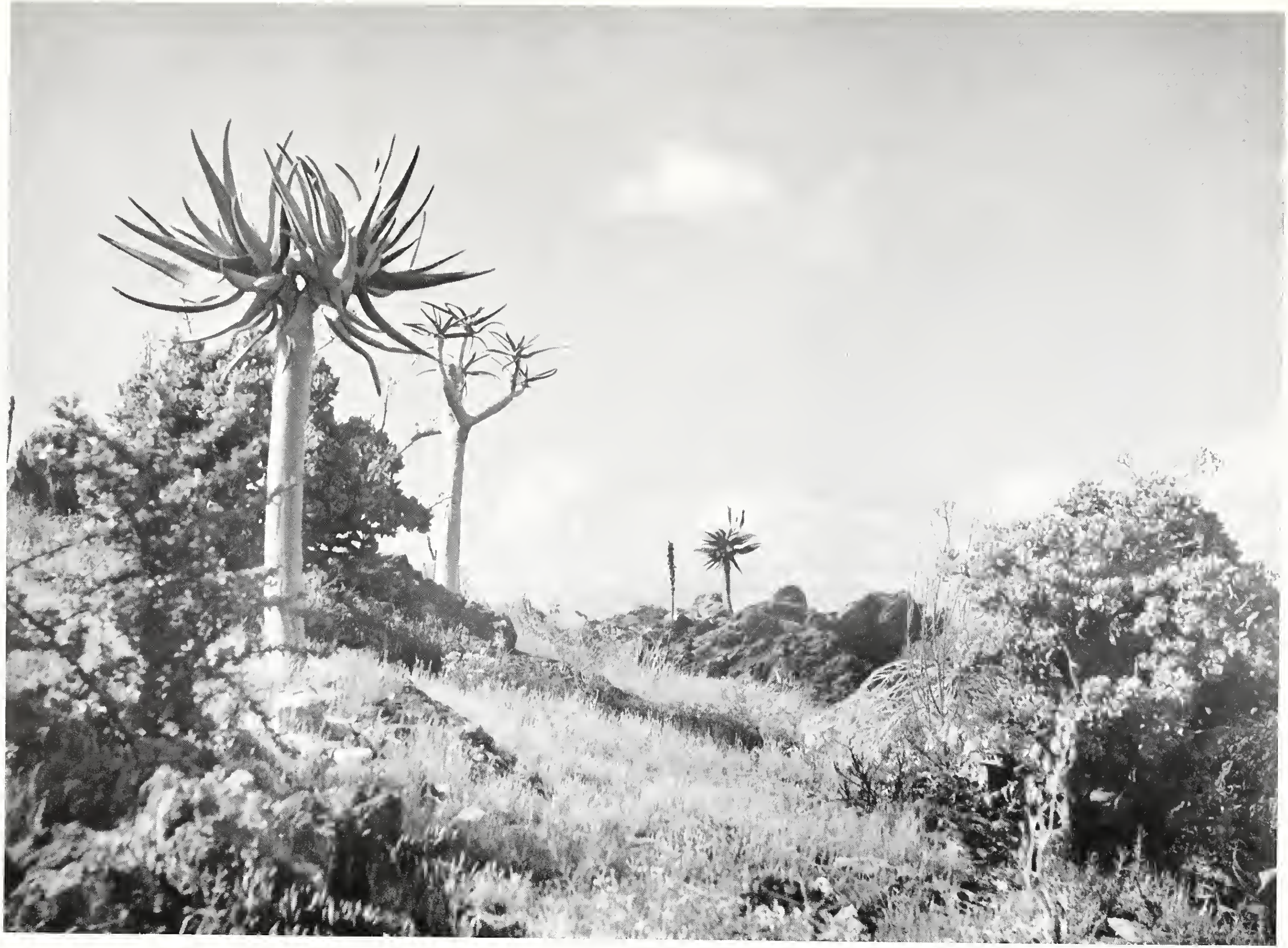
In 1945, the Trustees of the National Botanic Gardens asked the Municipality of Worcester to grant a portion of the Commonage situated two miles north of the town for the purposes of establishing the Karoo Garden there.

Under the leadership of Mr. James du Toit who was Mayor at the time, the Municipality acceded to this request and granted roughly sixteen morgen of commonage to the National Botanic Gardens. At the same time, Mr. Ch. Heatlie of De Wet, on reaching an exchange agreement with the Municipality, contributed an additional twenty morgen to form the high level background essential to complete a perfect setting. Thus, thanks to the sympathetic co-operation of all concerned, over thirty-six morgen were obtained wherein to make a new Karoo Garden in ideal surroundings, within easy reach.

I was appointed Curator in August 1945 and it was my privilege to lay the foundation of this new botanical garden. It is a chance given to few to create something worth while from the raw. How vividly I remember the utter wilderness confronting me: bush-covered hills, no roads, no water. The enormous task before me seemed overwhelming at first, but my keenness to make a success of this Karoo Garden carried me through the very difficult initial stages. These pioneering days were tough, assisted as I was for a long time by only two unskilled labourers. A major handicap was having to live in Worcester and having to cover the two uphill miles to the Karoo Garden by bicycle every day for the first two and a half years.

Work was started on 13 August 1945. Two labourers and myself began clearing the bushes along the whole perimeter to make way for the boundary fence. The hardest part of the fencing was the concreting of the various corner and straining posts. Material which had been dumped at the spot where the entrance is now had to be conveyed great distances mostly uphill by wheelbarrow, portage or by buckets hanging on my bicycle. As each one of these posts stands in three cubic feet of concrete, I think I can be forgiven if I stress the struggle this concreting entailed, especially that of the beacon posts on the distant and high level northern boundary. With no more than four hands besides my own, it took many months to complete this vermin-proof boundary fence, over 8,000 feet in length. Solidly built of non-perishable material, there is no reason why it should not last indefinitely, this being all to the good seeing the great cost it entailed. The fence consists of steel rails, iron standards, a 4 ft. high galvanized chain-mesh netting fixed to three strands of No. 8 galvanized anchor wire topped by one strand of barbed wire. Most of the 550 iron standards which are spaced every 15 ft. could not be hammered into position; holes had to be dug with crowbars through hard shale. Before finally closing the fence, a number of wild buck were driven out, but four of them unfortunately refused to leave those hills where they had roamed for so long. Very reluctantly I had to shoot them as well as fifteen hares which were doing a great deal of damage.

At an early stage, excavating for a reservoir was started on top of the hill where the house was to be built later. Encountering rock from the start, digging a pit 20 ft. wide by 10 ft. deep in very hard shale, with only two labourers, took a long time and many were the days when we were driven out of that hole by the terrific heat of the sun. All the excavated material was used to build the main drive's retaining walls and foundation.



[*Photo:* D. Hugo.

PLATE 3. The Karoo Garden, Worcester.

In April 1947 the actual reservoir of brick and cement reinforced with wire was built in the excavation. Ten feet deep and with a diameter of 20 ft., it has a capacity of 18,500 gallons of water. It is fed by an inch main connected to the large pipeline which since the beginning of the century has brought water to Worcester from the Brandwag Mountains. (This was not only Worcester's original supply of water but it also derived its first electricity hydraulically from that water.) A double line of galvanized piping first of 2 in., then 1 in. and reduced further to $\frac{3}{4}$ in. now feeds an extensive reticulation in various parts of the Garden such as the nursery, the shade-house and all along both roads converging to the main entrance.

The first material to be moved from Whitehill in September 1945 was all the water-piping and a fairly large iron hut used by the Coloured nursery boy. This hut was re-erected at the Karoo Garden and, to make it less unsightly, a shell of pine slabs was placed over it which at the same time helps to keep it cool. An additional room built of pine slabs was built next to it and a temporary shelter to serve as kitchen for labourers.

In May 1946 a very large private collection of succulents was moved from Worcester to the Karoo Garden.

The shade-house and the plants at Whitehill were transferred to Worcester in two large railway trucks in July 1946. Dismantling and collecting the plants took several days. Some very heavy *Aloe dichotoma* which had to be carried quite a distance to the trucks took a good deal of handling; it almost seemed that they were reluctant to leave Whitehill, though judging by their present healthy appearance on the koppie near the entrance (where they now stand guard) there is no doubt that they have forgiven us.

Also in July of the same year, Messrs. Hurling and Neil of Bonnievale donated a large collection of Aloes and Euphorbias to the Karoo Garden; these plants were transferred to Worcester in a railway truck.

The 350 *Aloe ferox* which line either side of the main drive from the entrance of the top of the house-hill were fetched in three lorry loads from Stormsvlei beyond Bonnievale in May 1947.

During the latter part of 1946 a potting-shed of brick and mortar with an asbestos roof was built near the nursery. It is used for sorting and storing seeds and for work connected with the nursery. A small tool-room is under the same roof.

The shade-house was re-erected in 1947 on the same lines as at Whitehill. It consists of three broad terraces each divided by a footpath lengthwise. Haworthias and other plants which prefer shade are kept there.

The foundation for the Curator's house was laid in September 1947. At the end of March 1948, I was able to move from Worcester with my family to occupy the outhouse temporarily. Though rather cramped for space it was a vast improvement from living miles away from my work. Four months later, we were able to occupy the house which was not quite completed however. We had to wait for over a year for electricity to be installed.

On 25 September 1948, the Karoo Garden was officially opened by His Excellency the Governor-General, the Right Honourable G. Brand van Zyl. General J. C. Smuts was one of the many dignitaries present. Fortunately the weather was perfect though rather hot and the 600 visitors enjoyed looking at the Garden.

A function to commemorate the official opening is held at the Karoo Garden yearly during the latter part of September. It is then that the Garden is in its most colourful stage, though by then most Aloes and many early flowering species are over. In September and October, however, many varieties of Lampranthus display their vivid colours; but perhaps the most striking of all are the *Drosanthemum speciosum* which are indigenous to the Worcester district. The amazing shades of their flowers, which completely cover the dome-shaped plants, must be seen to be believed. Gazanias and Dorotheanthus are most arresting too.

For the benefit of those who have not been here yet, I will attempt to describe the topography of the area. The Karoo Garden nestles among the foothills of the Brandwag mountain range, two miles to the north of Worcester and one mile above the national road. The Garden is roughly oblong in shape slightly wider at the waist, its length running from south to north. The entrance is situated a few hundred yards beyond the Worcester end of the western boundary. Looking in at the entrance gate towards south-east, you have in the near distance a low koppie with its colony of kokerbooms and *Aloe comosa*. Rising gently to the left, you have a larger hill at the summit of which stands the Curator's homestead. The main drive strikes an easterly course skirting the house-hill anti-clockwise until it reaches the top by easy gradient. In a small valley formed by the north slopes of the house-hill and the next koppie, you will see the nursery and its adjoining layouts of Argyroderma, Gibbaeum, Cheiridopsis, Pleiospilos, etc. The car-parking area is a little distance west of the nursery.

Many species of Euphorbias are to be seen on the eastern and northern slopes of the house-hill. In September and October you will note that my remarks about the beauty of the *Drosanthemum speciosum* ably assisted by colourful Dimorphothecas which grow on the same slope were not exaggeration. From the car park, the exit road winds its way down the west side of the house-hill to the entrance gate.

Immediately to the north of the nursery the terrain rises steeply to form another koppie of considerable height; at the base of its western slope which is covered with russet coloured rocks, there is a pretty kloof the higher reaches of which separate this koppie from the next, the highest in the Garden. From its summit the whole area of the Karoo Garden can be seen as well as Worcester and its surroundings. At the back of this last koppie, the boundary fence drops steeply from east to west into a valley the east slope of which is part of the Garden. Four miles to the north we have the Brandwag Mountains roughly 6,500 ft. high which are snow-capped in winter, a very beautiful setting indeed.

Climatically, the Karoo Garden is on the border line between the summer and winter rainfall area. Though it actually belongs to the latter area, in early and late summer Karoo thunder-storms occasionally break over the Garden, assuming proportions of cloudbursts. In seven years of recording, there has been a yearly average of 11·5 in. of rain, but if these accidental cloudbursts are disregarded (as well they might be for the little use they are and the damage they do), we are left with a truer average of 9 in. per annum. Only a few miles westwards, the rainfall is three or four times heavier. Winters are not severe; occasionally we have light frosts but winds can be bitterly cold. Calm days are most uncommon, in fact Worcester has quite a reputation for the violence and frequency of its nor-westers and the Karoo Garden gets more than its fair share of this evil destroyer. Were it not that most of my plants are tough and that most possess an amazing power of recuperation, this Garden would have been swept bare long ago. This famous wind is supposed to bring rain, but it often blows for days and nights without yielding a drop here, whereas only three or four miles to the west it simply pours. Fortunately south-easters are rarely more than light breezes sometimes mixed with fine rain. Summer heat though mostly dry can be scorching especially in February.

The rock formation at the Karoo Garden and its surrounding is commonly called 'the Worcester Fault', a geological phenomenon, because this shale formation should logically be found on top of the Table Mountain Sandstone forming the Brandwag range and not thousands of feet below as is the case.

Although the ground lacks the porosity and loaminess of that at Whitehill, most succulents are taking to it quite well. Being of a clayish nature, it needs conditioning with coarse sand and agricultural lime to check its tendency to imperviousness. This tendency is useful in the case of moisture-shy succulents, but it cannot be allowed to stand when such plants as Aloes, Lampranthus, Euryops and many other species have to be established.

The Karoo Garden like most other gardens has its worms, bugs, beetles, ants, moles and what not. The most troublesome is the aloe-borer which does a lot of damage and is difficult to control.

Inadequate and inferior labour has consistently been a real problem. Although the labour force is now three times stronger than at the start, i.e. six, it is still composed of raw Natives who have never done any such specialized work as required here. Even that would not be so bad if it wasn't that one is seldom able to keep these men for any length of time before their roving spirit gets hold of them. May be that a prefabricated cottage erected in December 1952 will to some extent counter this urge of shifting around.

In April 1953, a $\frac{3}{4}$-ton pick-up van was provided for the Karoo Garden; a prefabricated garage was put up for it. For seven and a half years the Garden had to depend on unreliable and very expensive hired transport. This lack of own transport facilities for so long has been most detrimental to progress and has also deprived the Karoo Garden of its fair share of plant collectings.

Quantities of seeds are gathered each year for distribution to members of the Botanical Society of South Africa and to scientific institutions.

And now, after eight years of steady progress, the Karoo Garden is attracting an ever-increasing number of visitors from far and wide. Thousands of succulents have been established in layouts planned to resemble nature as far as possible. For this purpose a quantity of white quartz gravel was brought over from the Ladismith Karoo. All the succulents here are essentially indigenous to South Africa and South-West Africa, mostly from Namaqualand, Bushmanland, north-west Cape, the Little and Great Karoo, the Midlands and the Transvaal. Most of them, however, have been raised from seed in the nursery. Grateful thanks are due to all those people who have kindly contributed plants to the Karoo Garden; their co-operation is deeply appreciated.

It is a well-known fact that our succulents in Southern Africa have for a very long time suffered grievously from

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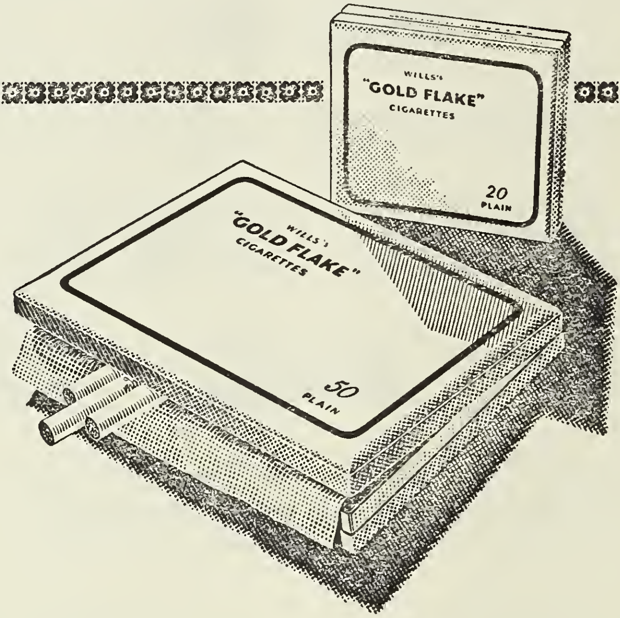

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such evils as droughts, over-grazing, fires and resulting erosion, but the worst offender is the so-called collector who vandalizes our veld for the sole purpose of commercializing his ill-gotten gains. To such selfish enemies of nature can be attributed the complete disappearance of a number of species.

The Karoo Garden has already given safe refuge to innumerable succulents; it is hoped that in due course all the remaining species still to be found will be growing here, where future generations will be able to enjoy seeing and studying them.

I could not close this article without a sincere word of praise and appreciation to the Botanical Society of South Africa for its unfailing financial support even through most difficult times and for so largely contributing to the development of the Karoo Garden.

The Propagation of Succulents from Seeds and Cuttings

By H. HALL

IT is generally agreed among enthusiastic cultivators of succulent plants that many of our native species are unobtainable in the trade these days and, furthermore, that the rarer and more popular kinds are becoming very scarce now that so many are protected by law from being uprooted in the veld. The known decrease in numbers among some of the rarer kinds in their natural habitat, although by no means due entirely to man's depredations —for the plough and the bulldozer, the sheep and goats have all taken their toll—encourages us to turn more and more to the task of cultivating them from seeds.

It must not, however, be inferred that seed-raising is in any way inferior to starting off with a mature plant, whether freshly dug from a commercial nursery or from its native soil. On the contrary, there are a number of real advantages to be obtained when grown from seeds. Some of these are as follows:

(*a*) From an economic standpoint the seeds are comparatively cheap and a good number of young plants are soon obtained.

(*b*) The young stock is usually clean and healthy, or pest free, for a surprisingly large number of wild plants carry insect pests which may or may not be apparent at the time but which invariably become more obvious at a later date, especially when the plants lose their vigour through wrong treatment.

(*c*) Seedlings invariably show much more vitality than many mature plants; juvenile vigour, as it were.

(*d*) Contrary to the widespread belief that all seedlings 'are so slow' a fair number of kinds will produce flowers in the first year when given the right conditions, examples being found with Glottiphyllum, Titanopsis, Faucaria and Bergeranthus. The dainty little *Rhinephyllum Broomii* will commence to flower when a mere three or four months old.

(*e*) The delight of observing the young plants' development through the various stages to their adult outlines.

(*f*) With certain varieties the only way to be sure of having a specimen that will assume its true form is to start from scratch and raise seedlings. Cuttings or 'slips' of these kinds rarely take on the true symmetry for which the particular plant is noted, although the reasons for this are obscure, several examples being found with the Euphorbias. Furthermore, cuttings of some of the interesting 'Stapelieae', such as Hoodia and Trichocaulon, are almost impossible to get going whereas they show remarkably fast growth when seedlings.

We are inclined to overlook the fact that examples, too numerous to estimate, of the trees and shrubs that adorn gardens the world over, originated from a few seeds gathered in their native haunts by the plant collectors of long ago.

THE SOIL MIXTURE FOR SOWING SEEDS

To make certain of eliminating worries such as insect pests and soil-borne diseases, as well as the weed seeds ever dormant in garden soil and compost, these substances should be sterilized some time before use. This is standard routine in the larger establishments because it has proved its worth many times over. This is carried out by electricity, by steam or by chemical means but for small amounts the simple process of heating on iron plates over a slow-burning fire will suffice. There is nothing more exasperating than to find all manner of weeds appearing in the seed containers, usually before the succulents have come through and, like weeds the world over, growing so much faster than the wanted plants and soon choking them out of existence if neglected.

I have used formalin for sterilizing soils on several occasions and can emphasize its efficiency, but the soil must be allowed two weeks to recuperate before use to allow the beneficial soil bacteria to re-establish themselves. However, the majority of enthusiasts cannot be bothered by what they feel to be an irksome task and usually get along without.

It is most essential that clean soil is chosen, the leaf-mould or compost should be very well decayed, and the sand also clean and somewhat 'gritty' rather than the fine sea-sand which is too often salt-impregnated. The soil derived from the rotted turf from an old lawn, for instance, is the best possible kind for all basic mixtures for it usually contains adequate plant food for the initial stages of the seedlings.

A suitable mixture for the seeds of the majority of succulents is

2 parts of soil,
1 part of leaf-mould (or compost, or peat),
2 parts of clean, coarse sand.

A small sprinkling of lime is beneficial, for most succulents appreciate it and garden soils are usually deficient in this substance. No other ingredients are required at this stage.

The whole should be thoroughly mixed, passed through a $\frac{1}{4}$ in. or $\frac{1}{2}$ in. sieve to remove the rough material, moistened to the right consistency which should slowly fall apart again when a portion is squeezed in the hands. The rough material from the sieve may be used in the bottom of the containers to act as drainage.

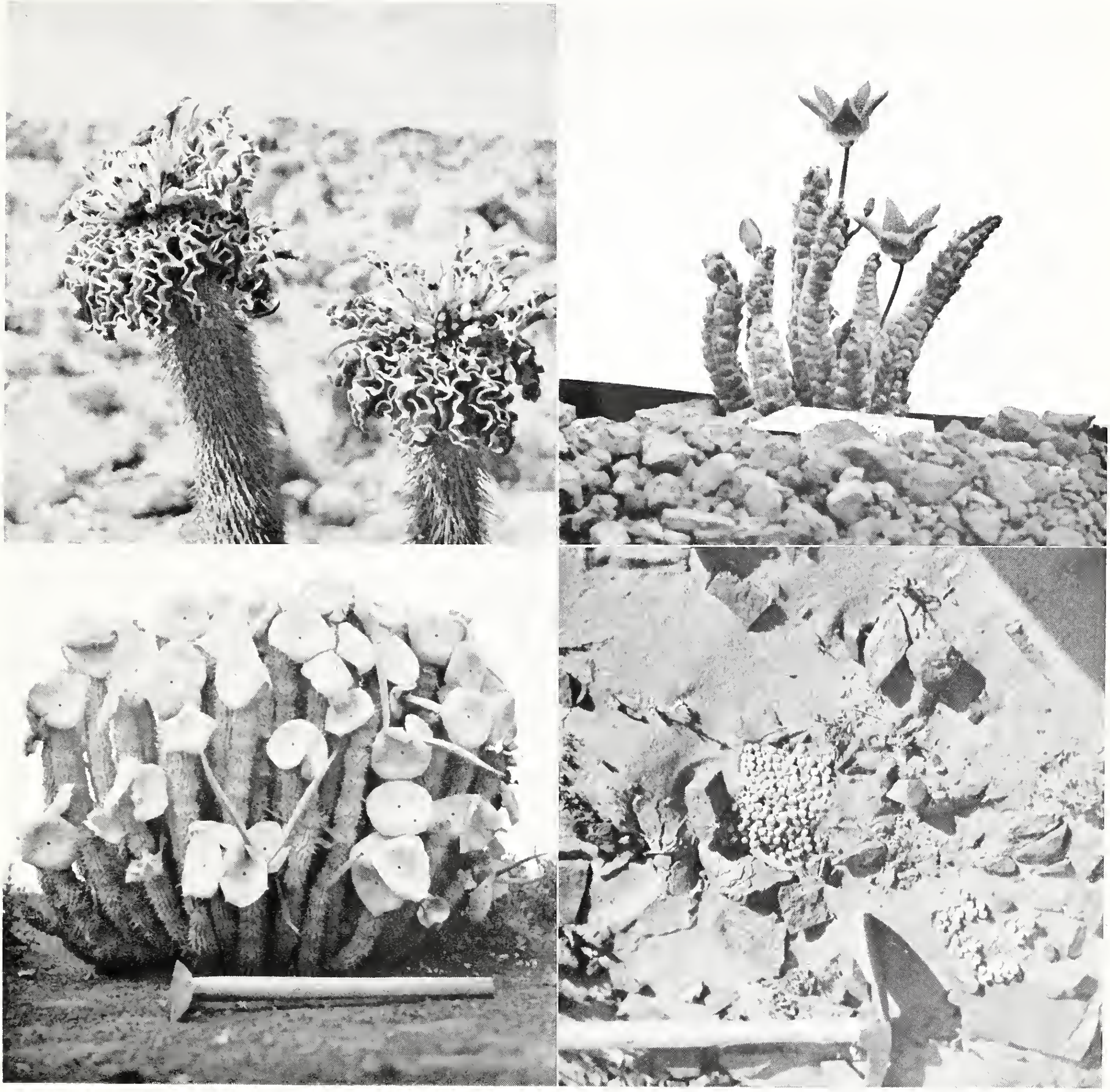
THE CONTAINERS

Pots and pans of various sizes and depths, shallow boxes and trays are used. All must be thoroughly clean before use. Their sizes are governed by the amount of seeds to be sown. The more valuable seeds are, naturally, the fewer and the smaller will be the pots or pans required for them. In all cases there must be adequate drainage holes in their bases and a good layer of rough material must be placed in the bottom to prevent the finer soil from blocking up the holes. At least $\frac{3}{4}$ in. of depth from the rims must be allowed to permit sufficient water to penetrate the whole. It is a common error to overfill the pots which means the deeper levels never get sufficiently moist when watered from above. The soil should be evenly finished off and lightly pressed down to ensure that all the seeds will lie at the same level.

The depth to which the seeds are covered is governed by their size and a simple rule is to bury them twice their own diameter. Large seeds such as Cissus, Euphorbias and some of the Aloes should be covered by about $\frac{1}{4}$ in. of the same soil mixture, lightly pressed down and quite level. The very fine seeds such as Crassula, Cotyledon, Lithops and Conophytum, should only be given the lightest dusting as a covering. Some prefer to leave them uncovered, because such fine seeds are already in between the soil particles and sufficiently protected. It must be remembered which contain the fine seeds since these must be steeped in water to avoid risk of loss by watering overhead. A careless overhead watering may well destroy these minute seeds or young seedlings. A further advantage gained by steeping is that the whole soil contents are completely moistened. A light layer of fine gravel or very coarse sand particles sprinkled on the surface also helps to prevent the seeds from rolling about and also gives the young seedlings a modicum of anchorage and protection until they get firmly established. To reduce the loss of moisture in the containers these may be plunged in sand or moss. This also helps considerably to keep the soil temperature from fluctuating between night and day. The containers should be protected from the direct rays of the sun and from the activities of birds, etc., using sheets of paper, twigs, or shaded glass.

TIMES FOR SEED SOWING

The seeds may be sown during any of the warmer months, i.e. from September to March, although we know that in nature they germinate with the advent of rains. Thus, in the Western Province, many succulents commence their lives in May and June. A garden frame, a sheltered corner of the garden, or the protection of a stoep where the seeds can be given some measure of care will do quite well.



[*Photos:* H. Hall.

PLATE 4. Some 'unusual' succulents.

Top left: Pachypodium Namaquanum flowers. *Top right*: Stapelia Herrei. *Bottom left*: Hoodia Burkei. *Lower right*: Fenestraria Aurantiaca.

Germination

Considerable variation occurs between the various kinds of seeds regarding the time taken to germinate. The age of the seed has to be considered in this respect. Quite a number of species will germinate and, if the pots are kept under the same conditions as advised above, further seedlings may appear a year later. This happens with many Euphorbias. The temperature and the time of the year also play their part. I have found that all the Anacampseros seeds will germinate in less than forty-eight hours. Practically all the 'Stapelieae' will appear in two to three days. Most of the vast Mesembryanthemum group take a week or so. The harder-shelled seeds of Euphorbias take longer and may be spread over several months, so the pots should never be discarded with undue haste. It should also be remembered that stored seeds may retain their vitality for a number of years and I have raised good plants from seed up to ten years old. But this is not outstanding for there are classic examples of such things lying dormant for decades.

Culture following Germination

Close observation and experience must guide the grower at this stage. Each type behaves in its own peculiar way. With the dwarf species, which are usually, but not always, the slow growers, the seedlings may remain undisturbed for a year, though, of course, gradually getting them accustomed to the light they need, and providing they are not unduly crowded together. Examples: Conophytum, Lithops, Dinteranthus and Gibbaeum. The more vigorous types will require spacing out in a few weeks or a month or two, according to progress, and the soil mixture should be a little richer than for the seeds. Plant each seedling about 1 in. apart, using a pointed stick and a little care with the roots.

Vigorous types like Glottiphyllum will soon ask for more space and must be given another move, either into boxes or planted out on the rockery. If the seedlings of the popular and very showy 'Mesems' (the Vygies) are spaced about 2 in. apart in the boxes they can be transplanted into their permanent quarters with a good portion of soil around their roots. Whether transferred from pots into boxes, or out into their flowering positions, they must be well watered afterwards to settle them in and give them a good start off.

Crassula falcata is a very popular succulent, both for its attractive shape and leaf colour and its showy scarlet flowers. The seed is dust-like and requires no soil-covering after sowing though the boxes must be shaded from the sun and kept steadily moist. Germination is usually good but the seedlings are rather slow for the first year. At about one year old they are about 2 in. across after which they grow much more rapidly and will reach flowering size in their second year. This species likes a rich soil with a fair proportion of humus, and also some watering in summer if the weather is dry.

The slower-growing types such as Argyroderma, Lithops, Conophytum and Dinteranthus, must be allowed to dry out slightly between waterings, especially when they begin to acquire their adult form. If moss forms on the surface of the soil in the pans or pots it is an indication that they are kept too wet. It is also a danger sign and can be responsible for the 'damping off' which will destroy valuable plants very swiftly. This may be remedied by drying out the soil and giving more airy conditions. Tablets of 'Chinosol', dissolved in water and sprinkled over the surface, is a well-known remedy for preventing 'damping off'. These slow-growing species dislike hot, humid conditions, especially under glass in this country, and the more fresh air they can get the healthier they will become, always bearing in mind that the soil and the roots are not allowed to get overheated by the sun in summer.

Practically all the Stapelia group grow rapidly in the young stages and prefer a fairly rich, sandy soil. Some of them, like the Trichocaulons and Hoodias, become very sensitive to water and atmospheric humidity as they grow older, especially in winter, and are classified as 'difficult' by most people. All Stapelias benefit from partial shade in summer and appreciate occasional watering at this time. It is always a great help to learn a bit about the natural conditions for the various species, seeing that they are found widely spread over Southern Africa.

The Haworthias form a very large group, are all fairly dwarf and compact, and benefit from a little shade in summer. Few of these are seen in the wild in full sun and those species occurring in open ground are invariably buried deeply in their stony surroundings.

Unless one is favoured with the ideal climate the pebble or stone-like forms—Lithops, Pleiospilos and Argyroderma—are best kept in pots or pans more or less permanently, being repotted as required. They can thus be readily taken into shelter from heavy rains or cold, winter conditions.

Resting Period

All succulents are modified to withstand long spells of dryness and in cultivation we should try to supply this resting period for the very succulent species, in particular those which come from the more arid regions. It is said that many Namaqualand species actually grow for only about two months of the year, being more or less dormant the remainder of the time. With some species this resting period is absolutely vital and many will not produce flowers if this drying off has been prevented. It is sometimes quite a problem to grow together, under the same conditions, a collection from all parts of the Union with its very varied climatic conditions. Species from Namaqualand, and the Western Province generally, make their growth in the cooler, rainy months, resting in summer. Those from the Eastern Province and the Transvaal are chiefly summer-growing types and are dormant in winter. Fortunately, the majority are fairly adaptable and can be grown successfully by careful planting and selecting the most suitable places for the various species which require them.

PROPAGATION BY CUTTINGS

A cutting may be any portion of a plant, removed, and made to take root. We are fortunate that succulents are among the easiest plants to be propagated by such vegetative means. The best time for this practice is during the warmer months, a certain degree of warmth being one of the factors which assist root formation.

The popular, showy flowered 'Mesems' are propagated with ease in March and April, by selecting healthy young portions and planting them about half their length in a light, sandy soil in a sheltered portion of the garden. These should be well rooted in four to six weeks and if planted out in June and July will usually be strong enough to flower in their first spring. This method applies, of course, to those areas which are not subject to severe winter conditions. The cuttings should be kept fairly moist to help the newly forming roots and to encourage fast growth. It is recognized that these 'Vygies' flower so profusely that they become exhausted after three to four years and replacement by fresh cuttings is imperative if a healthy stock is desired.

With the more fleshy succulents such as the Aloes and Euphorbias it is very important to allow the cut surfaces to dry off thoroughly before planting. Again it is wise to choose healthy young branches for the purpose. Whenever possible, the cut should be made where there is a natural joint, especially with Euphorbias. For one thing the cut area is smaller and the formation of roots takes place more easily. The more valuable species are best rooted in pots or boxes in a frame, using a very sandy soil and protecting the cuttings from the strong light. While it is true that many kinds can be struck directly in their permanent site with no more care than a support until their own roots supply sufficient anchorage, examples being *Aloe arborescens*, *Cotyledon orbiculata* and *Crassula argentea*, there are many others which require more time and care. The majority of the fleshy Euphorbias should be kept quite dry until roots have commenced; in fact, watering may kill them in a matter of days whereas they will remain healthy and apparently unchanged for many months if kept perfectly dry. Succulents are much more easily killed by water than by drought, in cultivation, at any rate. Since a cutting of this type has no roots for perhaps months, but has enough sustenance to last a very long time, water could not be utilized if it were given it. Some species are best rooted by tying the cutting to a stake so that the base is merely touching the surface of the soil. I have often kept cuttings of the larger, tree types on a dry shelf until roots have commenced to show, though it may take three or four months in the process. It is better to be sure than sorry, especially with Euphorbias.

A popular substance for rooting most cuttings of this nature is vermiculite which is quite inert but retains a little moisture for a long time, has plenty of air space in it and the cuttings can be examined from time to time without damage to any of the young roots which may have formed.

The rare *Euphorbia obesa* would appear to be the least likely species to be used for 'cuttings' but it has been done. It is the most prized of all the Euphorbias, is normally about the size and shape of a cricket ball, leafless, spineless and usually never branches throughout its life. Many years ago I made some experiments with a few plants. One was severed clean across its widest diameter, both portions dried off for several months and the top half, the 'cutting', placed on clean dry sand where it commenced to root after a year or so, and eventually became an otherwise normal plant. The lower half eventually produced a crop of small side shoots which were also removed and rooted when large enough to use. In the latter case the task was both simpler and safer, for the severed area was comparatively small. I found a speedier and safer method was to simply remove the growing point, in the case of this Euphorbia, the apex. This greatly lessened the risk of loss and the miniature spheres formed on the flattened ridges all around the area of the wound. This species is readily grown from seeds and the above experiments are not recommended.

The well-known *Euphorbia caput-medusae* with its dense head of snake-like branches from the solitary 'crown' is a special case. These branches will take root easily enough but rarely, if ever, acquire the habit and symmetry of the adult plant, i.e. sprouting branches radially from a central crown. They will, of course, eventually branch in a somewhat haphazard manner after, sometimes, a yard or so of snake-like growth. There are some who claim to have succeeded in obtaining perfectly normal growth in the long run but it is very doubtful. As it is a species which grows readily from seeds the typical habit is determined at a very early age.

Old and sickly plants are often saved by judicious cuttings taken before it is too late. A wet season may kill the roots and rot creeps up the stem. The upper portion can invariably be saved if observed in time.

Leaf Cuttings

A surprisingly large number of succulents can be propagated by their leaves, or merely portions of leaves. The Gasterias and many Haworthias, Crassula and Kalanchoe may all be propagated in this manner. Although many species of both Gasteria and Haworthia form quite dense clumps quite naturally with age there are others which do not, or only very slowly indeed. We thus try to increase them by leaf cuttings, by removing the growing points to force them into activity around the old stems, etc.

Crassula falcata is commonly increased by leaf cuttings because it is so popular for its attractive leaves and showy scarlet, aromatic flowers. In all cases, whether it is an entire leaf or merely a portion of a leaf they should be dried off for a few days before laying them on a light sandy soil in boxes or in a frame. A light shade from the strong sun is essential. No advantage is gained by burying the bases of the 'cuttings'. It is not unusual to obtain a dozen or more healthy young plants from a single leaf. Some species of Crassula and Adromischus discard their leaves almost too readily and immediately commence to form roots where they fall. The related Kalanchoe and Bryophyllum often bear numerous plantlets on their leaf-margins quite naturally while still attached to the parent plant. Some Crassulas and Kalanchoes also produce myriads of tiny plants on their flower-spikes after the flowers have faded, these eventually falling to the ground and living their separate lives.

These are just a few of the ways in which we can increase the number of our plants with little trouble, and without the necessity of robbing the veld of its diminishing supply.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT, 1952

Your Council has pleasure in presenting the Thirty-Ninth Annual Report of this Society for the year ending 31 December 1952.

Four Meetings of Council were held during the year.

MEMBERSHIP.—A total of 416 New Members were enrolled during the year, constituting a record. Resignations and deaths amounted to 112, while 184 Members who had lapsed in their subscriptions for two years were struck off the membership roll. The net gain in membership was 120. Total membership of the Society, as at 31 December 1952 stands at 2,680, including 169 Life Members.

FINANCIAL.—Income received during the year from subscriptions, donations and interest from investments, amounted to £3,232 13*s.* 11*d.*; this, less expenses of £752 19*s.* 8*d.*, leaves a balance of £2,479 14*s.* 3*d.* which sum constitutes the Society's Grant to the Trustees of Kirstenbosch and the Karoo Garden, Worcester, for the year 1953. This is the largest grant yet paid to the Trustees. The sum of £180 1*s.* 4*d.* was received in respect of Life Members during the year, bringing the total of the Life Members fund to £1,930 7*s.* 2*d.* There were no payments from this fund during 1952. A further amount of £120 has been received in respect of the bequest of the late Dr. Bernard Price, and this together with the previous amount of £700 received in 1949 has been placed on fixed deposit to form a Special Fund to be held in reserve for specified requirements.

WILD FLOWERS PROTECTION SECTION.—The Report of the Committee is annexed.

'WILD FLOWERS OF THE CAPE OF GOOD HOPE.'—Sales of this book continue to be satisfactory. Only a relatively small deficit now exists. In order to discharge its debt to the printers, the Publication Committee was granted an interest-free loan of £2,000 from the Department of Education, Arts and Science (National Council for Social Research). The Committee has every confidence that it will be able to repay this loan during 1953.

SEED DISTRIBUTION.—The National Botanic Gardens distributed 12,808 packets of seeds to Members of the Botanical Society during the year.

JOURNAL OF THE BOTANICAL SOCIETY, PART XXXVI.—Edited by Professor R. H. Compton, was published during the year and issued to all Members, Learned Societies, etc.

NATURE CONSERVATION: ADVISORY COMMITTEE.—In August, the Council of the Botanical Society was invited by the Cape Provincial Administration to appoint a representative on the Advisory Committee of the newly formed Department of Nature Conservation. Professor Compton was duly elected to fill this office.

MEETINGS OF THE SOCIETY.—The following meetings were held during the year.

25 MARCH. Lecture Hall, Kirstenbosch. Annual General Meeting. After the business of the meeting was concluded, Mr. Bernard Carp gave a very interesting talk on 'Some Scientific Expeditions into Southern Africa'. Approximately 120 members were present.

20 MAY. Lecture Hall, Kirstenbosch. 'Edible and Poisonous Fungi' provided the theme for a most interesting lecture, illustrated with colour slides, which was given by Miss E. L. Stephens. The Hall was filled to overflowing with members and their friends.

26 JUNE. Lecture Hall, Kirstenbosch. Dr. G. W. Reynolds spoke to us on 'Aloe Hunting in Central and Northern Africa', illustrating his most interesting talk with colour slides. There was an attendance of 120.

16 JULY. Lecture Hall, Kirstenbosch. Sir Edward Salisbury, Director of the Royal Botanic Gardens, Kew, who was on a visit to South Africa, kindly lectured on 'The Biology of Reproduction'. The Council of the Botanical Society gave a dinner in honour of Sir Edward, in the Tea House, Kirstenbosch, prior to the meeting.

13 AUGUST. Miss W. de Villiers was our kindly hostess when we visited her lovely wild flower garden 'Karibia', Sir Lowry's Pass. Although the weather was not very suitable to enable us to see the full beauty of this garden, we spent a most interesting and enjoyable afternoon. Miss de Villiers kindly extended a cordial invitation to all members present, about 100, to visit her again when the weather was more suitable. A delightful tea was

provided by Miss de Villiers and her lady helpers to whom sincere thanks are here recorded.

20 September. Anniversary Meeting, Karoo Garden, Worcester. Approximately 70 members attended this meeting which was held in perfect weather. Mr. J. Thudichum, Curator, conducted members on a tour of the Garden. Tea was kindly provided by Mrs. Thudichum and ladies of the Worcester Sub-Committee.

4 October. Annual Gathering of Members, New Lawn, Kirstenbosch. This was held in perfect weather and attended by 150 members. Refreshments were, as usual, served on the Lawn.

11 October. Dr. H. B. Rycroft, Forest Research Officer, kindly conducted us round the Forest Research Station at Jonkershoek. A very pleasant and instructive afternoon was enjoyed by members who numbered about 150.

18 October. The Dowager Lady de Villiers' beautiful garden at Stellenbosch provided the setting for a delightful afternoon, when about 160 members came along to admire the flowers. Tea was kindly provided by our hostess.

The Council of the Botanical Society wishes to place on record its sincere appreciation to all who in any way contributed towards making the above meetings the success they undoubtedly were.

Office Bearers.—At the Annual General Meeting of the Society held on 25 March the following were elected:

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, The Rt. Hon. E. F. Watermeyer.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council:

Professor R. S. Adamson
Sir Alfred Beit
Mr. D. R. D'Ewes
Mrs. F. Bolus
Mr. C. H. Clayton
Mr. M. Clough
Dr. E. L. Gill
Mr. C. R. Gohl.
Miss M. E. Johns
Miss G. J. Lewis
Miss K. Murray
Mr. H. N. Porter
Mr. L. A. Solomon
Miss E. L. Stephens
Mr. J. S. Linley
Mr. W. C. West
Mrs. M. Kidd
Mrs. M. R. Levyns
Mr. G. E. Williamson
Dr. H. B. Rycroft.

Mr. C. J. Sibbett was re-elected Chairman at the first Meeting of Council.

Obituary.—Your council regrets to record the deaths of 23 members of the Society during the year, including Captain E. J. Scholtz who was a member of Council for many years, and Miss K. C. Stanford who was a great lover of our wild flowers and who did a great deal to encourage their cultivation both here and overseas.

Thanks.—Sincere thanks are here recorded to the Cape Provincial Administration for the use of their rooms for meetings of Council during the year. Gratitude is also expressed to the daily Press for its ready co-operation at all times.

C. J. Sibbett,
Chairman.

(Mrs.) W. N. Hall,
Hon. Secretary/Treasurer.

Wild Flowers Protection Section Committee

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1952

Two meetings of the Committee were held during the year.

MEMBERSHIP.—New Members to the Section totalled 67, bringing the total membership to 606 at the year's end.

FINANCIAL.—A total amount of £186 0*s.* 5*d.* was received in subscriptions during the year. The maximum Grant-in-aid of £150 was also received from the Cape Provincial Administration. Fixed deposits amounted to £411 1*s.* 11*d.* The sum of £792 11*s.* 10*d.* represents the full amount to the credit of the Section as at 31 December 1952.

CONTRAVENTION OF THE WILD FLOWERS PROTECTION ORDINANCES.—The list of cases dealt with by our appointed officer, Mr. H. D. W. Meyer, are detailed herewith:

Selling Protected Species	147
Trading without Licence	16
Children under 16 trading	1
Other Offences	230

These figures show a decrease on last year's figures with the exception of 'Selling Protected Species' which numbered 17 in 1951. The increase of 130 in 1952 is probably due to the fact that a new Schedule was promulgated in February 1952; this, however, should be no excuse as all regular flower sellers were advised in detail of the new Proclamation, and a full month's warning was issued before any summonses were taken out against offenders. The sum of £273 15*s.* 0*d.* was paid into the courts in fines during 1952.

APPOINTMENT OF HONORARY WILD FLOWERS PROTECTION OFFICERS.—During the year members of the Wild Flowers Protection Committee were granted special authority to enable them to investigate and take action against any contraventions of the Ordinances. In addition they were also appointed Honorary Nature Conservation Officers in respect of the Cape Provincial Administration's Department of Nature Conservation which was formed in 1952, and with which body the Wild Flowers Protection Committee is fully co-operative. As noted in the Botanical Society Report, Professor Compton was appointed to the Advisory Committee of this Department during the year.

APPOINTMENT OF HONORARY WILD FLOWERS NURSERY INSPECTORS.—As a result of inquiries and recommendations made to the Cape Provincial Administration during 1951-2, Messrs. J. S. Linley and H. D. W. Meyer were appointed Honorary Wild Flower Nursery Inspectors in May 1952. Messrs. Linley and Meyer have since inspected a number of nurseries and their 'sites'. It is gratifying to report that in most cases these inspections have been carried out in an atmosphere of helpful co-operation by the nurserymen concerned who are desirous to observe the Ordinances and help towards the preservation of our wild flowers by encouraging their cultivation.

WILD FLOWERS PROTECTION ORDINANCES: INCLUSION OF ADDITIONAL SPECIES.—A Proclamation Gazetted on 23 February 1952 was the direct result of recommendations made by the Committee to the Cape Provincial Administration in November 1951. Many more species of wild flowers which were in need of protection are scheduled in this new Proclamation.

MEMBERS OF THE COMMITTEE, 1952.—The following were elected at the first meeting of the Council of the Botanical Society held in June:

Professor R. H. Compton
Mr. C. J. Sibbett
Mrs. F. Bolus
Mr. C. H. Clayton
Senator M. J. van Breda
Mr. C. R. Gohl
Miss K. Murray
Mr. W. C. West
Mr. C. St. L. Searle
Dr. H. B. Rycroft
Mr. J. S. Linley
Dr. E. L. Gill
Miss M. E. Johns
Mr. H. N. Porter

Professor Compton was re-elected Chairman at the first meeting of the Committee.

R. H. COMPTON,
Chairman.

(Mrs.) W. N. HALL,
Hon. Secretary/Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31 December 1952.

		£ s. d.	£ s. d.
Life Membership Fund:			
Balance as at 1/1/52		1,750 5 11	
Received during 1952		180 1 4	
			1,930 7 3
Subscriptions Paid in Advance:			168 0 0
Dr. Bernard Price Bequest Fund			
Balance 1/1/52		700 0 0	
Received during 1952		120 0 0	
			820 0 0
National Botanical Gardens:			
Surplus for year			2,479 14 3
			5,398 1 6
Wild Flower Protection Section:			
Balance as at 1/1/52		730 10 11	
Grant from Provincial Administration		150 0 0	
Subscriptions received during 1952			
Ordinary	181 0 5		
Life	5 0 0		
		186 0 5	
Interest received during 1952		15 1 7	
		1,081 12 11	
Less 5% of 1952 Subscriptions credited to General Administration Expenses	9 6 0		
Salaries re Part-time Services	250 0 0		
Stationery, Printing, Postages, Bank Charges, etc.	29 15 1		
		289 1 1	
			792 11 10
			£6,190 13 4

	£ s. d.	£ s. d.
Cape of Good Hope Savings Bank:		
Deposit with interest at 3½% p.a. to 31/12/52		790 19 8
Post Office Savings Bank:		
Deposit with interest at 3% to 31/12/52		83 12 7
United Building Society:		
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/52	557 19 5	
Savings Bank Account with interest at 2% p.a. to 31/12/52	542 1 2	
		1,100 0 7
South African Permanent Mutual Building Society:		
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/52	454 5 4	
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/52	836 14 11	
		1,291 0 3
Cash at Standard Bank of S.A. Ltd.		
Current Account	1,215 18 10	
On Hand	2 2 10	
		1,218 1 8
Miscellaneous Assets		
Amount due from Wild Flower Protection Section	9 6 0	
Stock of Reprints on Hand	1 8 0	
		10 14 0
Dr. Bernard Price Bequest—Investment Fund:		
Fixed Deposit for 12 months with the United Building Society with interest at 4% p.a. to 31/12/52	782 18 1	
Fixed Deposit for 12 months with the United Building Society with interest at 4% p.a. to 31/12/52	120 14 8	
		903 12 9
		5,398 1 6
Wild Flower Protection Section:		
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society with interest at 4% p.a. to 31/12/52	282 11 2	
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society with interest at 4% p.a. to 31/12/52	129 0 9	
Cash at Standard Bank of S.A. Ltd.—Current Account	390 5 11	
	801 17 10	
Less amount due to General Account	9 6 0	
		792 11 10
		£6,190 13 4

We have to report that we have examined the above Balance Sheet with the books and vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shown by the books of the Society.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

22 January 1953, Cape Town.

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31 December 1952.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Administration Expenses		135 12 0	By Subscriptions:		
,, Audit Fees		15 15 0	Family Members	473 16 0	
,, Honorarium to Secretary-Treasurer		283 6 8	Ordinary Members	2,238 15 10	
,, Bank Charges		11 13 5	Associate Members	298 5 4	
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,, Journal No. XXXVII:			,, Donations		83 12 7
Printing, Dispatching, Postages, etc.	294 6 2		,, Interest on Investments		130 0 7
Less Received from Advertisements	84 0 0		,, Profit on Sale of Reprints		8 3 7
		210 6 2			
,, Surplus for year		2,479 14 3			
		£3,232 13 11			£3,232 13 11

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(*a*) To encourage the inhabitants of South Africa to take an active part in the progress and development of the National Botanic Gardens at Kirstenbosch and the Karoo Garden at Worcester and to induce them to appreciate their responsibilities therein.

(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organize shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members of botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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BOTANICAL SOCIETY
OF SOUTH AFRICA

Edited by H. B. RYCROFT, M.Sc.,
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Part XXXIX 1953

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(Photo: Press Photo Service)

PLATE I. A Happy Group at the Society's Annual Gathering of Members at Kirstenbosch on 3 October 1953. *From left to right*: Professor H. B. Rycroft, Mrs. Compton, Mr. W. Duncan Baxter. Professor R. H. Compton.

The Journal of the Botanical Society of South Africa

EDITED BY H. B. RYCROFT

PART XXXIX 1953

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Adieu

By DUDLEY R. D'EWES

BY the time this issue of the Journal appears Professor Compton will be a thousand miles away from his old home and 'workshop' in Kirstenbosch, enjoying what the Old Adam of journalese impels me to describe in the cliché 'well-merited retirement'.

If I know anything of Robert Harold Compton, botanist and nature-lover, and if I rightly interpreted the shining eyes with which he examined the microscope given him as a parting present by the Council of the Botanical Society, he will be deep in study of the flora of the hilltop in Swaziland which, out of all the wide spaces of southern Africa, he and Mrs. Compton have chosen as their new home.

Professor Compton was Director of Kirstenbosch for thirty-five years. He came out in 1919 as one of the batch of young and distinguished professors recruited immediately after World War I to staff a university college that had just become a self-governing university. He had had a brilliant academic career at Cambridge, and had done some botanical exploring in a mission to New Caledonia. He was thus academically and practically equipped. But he was not prepared for what he found here; he had no special advance knowledge of the amazing riches of the Cape flora, or of the shining opportunity that Kirstenbosch offered to serve that flora. Kirstenbosch itself had been laid out in broad outline by Pearson, but Pearson had had only three years when untimely death ended his brilliant career. It was Compton who inherited both the vision and the task of consolidation.

One has but to stroll through Kirstenbosch at any time of the day at any time of the year now to appreciate how Compton guarded that vision and acquitted himself of his task. Much was said of these things at the farewell gatherings on his retirement, and it is not necessary for me to repeat them in detail. In brief, we have one of the finest gardens in the world, and perhaps the only scientific garden devoted to the flora of one single region. That garden is equipped, as it should be, with a herbarium. During the years of Professor Compton's directorship a vast body of information has been amassed about the cultivation of South African plants, so that whereas even a few years ago people thought that 'Cape flowers don't grow in gardens', there are now flourishing nurseries specializing—very profitably—in what were once some of our rarer species; we have a magnificent garden of succulents and other xerophytes at Worcester; the Botanical Society has become an influential body; our flower protection laws are up to date; and, most important, the great body of public opinion in South Africa is far more enlightened in its attitude to flower protection than many of us could, even two decades ago, have hoped.

Professor Compton would be the last to claim sole credit for all these developments, but we who have watched developments know how much we are indebted to his vision, his work, and his persistence. That persistence was exercised not only in his work at the university and at Kirstenbosch, or even within the ambit of the Society. As a journalist I can disclose that much of the better information that has appeared in the newspapers in recent years about our flora and its protection has come from Professor Compton, who was always ready with information—and always patient even when reporters have disclosed, by maladroit questions, that they had little notion of the difference between proteas and composites, and were even a little vague about the distinction between annuals and perennials.

But the thirty-five years of Professor Compton's work have seen other and less encouraging developments. He is deeply concerned, like many others, at the fact that the agricultural progress of the western Cape has resulted in the destruction for ever of much of our flora. The richer soil of the valleys and the lower slopes of our mountains has steadily been eaten up by the plough to grow vines or fruit; and the stateliest specimens of proteas, and some of the prouder bulbs have disappeared. On the Cape Flats, and all the way up the west coast, the acacias have choked out the rich and varied vegetation that covered the sand. Our flora has been driven to the crags and the mountain tops; even there it is not quite safe against fire or against the steadily infiltrating hosts of exotic trees and, in some places, shrubs.

In fact the tenor of a private chat I had with Professor Compton just before his retirement was that in spite of advances in knowledge and legislation, and in spite of improvements in public opinion, we cannot yet rest. We still have to protect our flora in its last refuges in the mountains. We still need to maintain the Botanical

Society as a powerful body to watch developments vigilantly, to guide where necessary, and in particular to encourage all efforts at establishing nature reserves and sanctuaries not simply as paper proclamations, but as areas where positive work is done for the protection and improvement of the flora.

What about botany? When Professor Compton came here in 1919 there was still an immense amount of sorting out necessary in the systematics of the South African flora. This work is not yet ended, but its back has been broken. I asked Professor Compton what worlds remain for young botanists to conquer, would they now have to plod on in their predecessors' footsteps, becoming more and more pedantic about precedences in nomenclature and in prolonged hairsplitting about capitalization and the like, or was there new ground? His reply was that there is no final frontier.

Two obvious lines for further work have hardly been explored. One is ecology, which can now be tackled with some confidence, since the systematics of the local flora have been cleared up. Ecology, the study of plants or animals in the field, with the interrelationships of species, genera, families and orders, may well prove one of the most absorbingly interesting specializations and one that may bring highly important results.

The other line is cytology, the study of plant cells.

Apart from these, much work remains to be done in special lines like the seaweeds around our coast which are only now beginning to receive the attention they deserve. After a lifetime as a botanist, Professor Compton still regards botany as the best hobby in the world, and one to be recommended to any young people who want their profession to be their recreation all their lives.

When he first came to the Cape in 1919 and saw the Cape flora he felt like a child at a party. In 1953, retiring after thirty-five years of hard work on and for that flora, he still feels the same.

And that, if I may interject my personal comment, explains the success of his work, the growth of Kirstenbosch, and the depth of the regret with which our Society saw him lay down his task.

(Photo: E. Bieber)

PLATE 2. Professor R. H. Compton.

Welcome

SINCE the last issue of the Botanical Society's Journal important changes have taken place at Kirstenbosch.

In December Professor Compton ended his long tenure of office as Director after thirty-five years' service and Members of the Society paid suitable tribute to him in acknowledgement of all that he had done for Kirstenbosch and the Karoo Garden.

He has been succeeded by Professor H. B. Rycroft and it is fitting that, in my capacity as President of the Botanical Society of South Africa as well as Chairman of the Board of Trustees, I should publish in the Journal a message of welcome to our new Director at the outset of his career in that capacity. He is a young man well qualified to occupy this most important position of head of the National Botanic Gardens concurrently with the Harold Pearson Chair of Botany at the University of Cape Town, which posts have always been held together.

Since Professor Rycroft assumed office at Kirstenbosch I have been in close touch with him; and the more I see of him and the efficient way he is taking control of the Gardens, the more convinced am I that we have found the right man to carry on the work at Kirstenbosch and Worcester and to develop it on the right lines. He will be a worthy successor of Pearson and Compton and I am sure all Members of our Society will join with me in welcoming him as Director and in wishing him a very successful career in that office.

W. DUNCAN BAXTER

News and Notes

Adieu to Professor Compton

The departure of Professor Compton at the end of 1953 from the National Botanic Gardens, Kirstenbosch, has created a great gap in the Gardens. He was Director of the Gardens and the Harold Pearson Professor of Botany at the University of Cape Town for thirty-five years. When he commenced duty at this Institution the post of Director had been vacant for more than two years after the untimely death of its founder, Professor H. H. W. Pearson, who himself had been at Kirstenbosch for only three years. Imagine the simplicity of the Gardens in those early days of horse and cart, candles, muddy roads and comparatively primitive equipment. It is difficult to realize that under the direction of one man the Gardens have developed as they have since 1919. The Gardens are a tribute to the tireless endeavour and ceaseless devotion of Professor Compton. We are proud of him. Further remarks on Professor Compton's contribution to Kirstenbosch and to the study of Botany in South Africa appear in this Journal by Mr. Dudley D'Ewes.

* * *

The Compton Herbarium

Professor Compton did a tremendous amount of work in the Herbarium at Kirstenbosch where he spent many evenings and many week-ends. It was there, too, that he described many of the plants new to science. He is still in the Herbarium, not sitting beside his microscope, but in a frame hanging on the wall. It is most fitting that his likeness, so masterfully executed by Captain Wale Smith, should occupy its present position. He is even more closely connected to the Herbarium than that; or should we say the Herbarium connected to him? Some members of the Botanical Society suggested that in appreciation of the many years of devoted service to the Gardens and to the study of botany in South Africa the Herbarium should bear his name. The Board of Trustees agreed to this suggestion and the building is now very appropriately called the 'Compton Herbarium'. When informed of this decision Professor Compton wrote: 'It was deeply gratifying to me to hear of the decision to attach my name to the Garden's Herbarium. Would you please convey to the Trustees my sincere appreciation of their action, and say that there is no way in which I could value more highly the commemoration of my work at Kirstenbosch.'

Features in this Journal

The Botanical Society has always taken a very keen interest in the conservation of the natural flora of South Africa and the associated fauna, soil and water, and will always continue to do so. It is therefore very distressing to witness the gradual but persistent retreat of our flora in the face of increasing encroachment by agriculture, industry and the like. This is the subject of an article by Professor R. S. Adamson in the Journal.

In 'Summer Flowers on the Jonkershoek Mountains' Mrs. M. L. Wicht describes the vegetation of one of the loveliest peaks of the south-western Cape. Hakea, the Cluster Pine and other exotics which, alas, are spreading on many of the Cape mountains have been successfully eradicated at Jonkershoek so that nature can be seen at its best.

Although Kirstenbosch is so well known and so appreciated we are nevertheless glad to publish Mrs. Hall's account of the Gardens. It will, perhaps, bring back pleasant memories to those who visited Kirstenbosch some time ago but have not had the opportunity to return.

Few of us realize what a wealth of plant-life exists in the sea. There is reason to believe that in the not far distant future these plants will be exploited for the use of man. This 'vegetation' along the South African coast is now receiving more scientific attention than it did in the past and as an introduction to the subject Professor W. E. Isaac has written about 'Plants of Land and Sea'. In the next issue we hope to publish another article by Professor Isaac devoted more to our interesting marine flora.

* * *

Appreciative Members' Donation of £300

At the Annual General Meeting of the Botanical Society held on 23 March 1954 the President, Mr. W. Duncan Baxter, explained that subscriptions during 1953 were less than during the previous year with the result that the amount handed over to the National Botanic Gardens had decreased by £300. Mr. Baxter further stressed that due to the rising costs the Gardens required more and more funds. An increase in the membership would help to achieve this. On reading about this in the local press our Members, Mr. and Mrs. Frank Connock, handed over a cheque for £300 to the Society. Mr. Connock wrote: 'I consider Kirstenbosch one of the best and most beautiful spots in the Cape or anywhere. I have spent many pleasant hours there and it gives me and my wife much pleasure to show our appreciation by sending the enclosed cheque for £300.' They hope that their action will encourage others to do similarly. The very grateful thanks of the Botanical Society and of the National Botanic Gardens are due to Mr. and Mrs. Connock for their magnificent gesture.

* * *

Bequest

Mrs. M. E. Whitehead of Mooi River, Natal, has bequeathed a sum of £250, free of all duties, to be spent upon the Gardens at Kirstenbosch. We are always most grateful to those who in their wills leave something to Kirstenbosch.

* * *

Famous Artist's Picture

Charles Masser, grandson of Turner, the great English artist, died in 1952. He himself was an artist of considerable talent, having been awarded a gold medal in 1914. Masser was a personal friend of Professor Pearson, first Director of the National Botanic Gardens, and was therefore closely associated with Kirstenbosch in the early days.

After Masser's death his wife and son sorted out his paintings and discussed one done in Kirstenbosch in 1925. They considered that it would be most appropriate if it could be permanently on view at Kirstenbosch and they have accordingly donated it to the Gardens. It hangs now in the lounge of the Tea House. In the foreground is a gravel path and Professor Pearson's grave. Further back the trees have assumed their autumn colours and in the far distance one can see the Stellenbosch and Paarl districts. The gold medal and the picture for which it was awarded have been lent to the Society and may also be seen at Kirstenbosch.

* * *

Visit of American Lecturer

Members can look forward to the visit in September 1954 of Mrs. Raymond W. Greene from the U.S.A. Mrs. Greene has travelled through most parts of the world for the purpose of studying and painting flowers, and lecturing about them. During her stay in this country she will paint flowers at Kirstenbosch and in other parts of South Africa. Tentative arrangements have been made for her to give two lectures to members of the Botanical Society in the Lecture Hall, Kirstenbosch, on the evenings of 7 and 14 September. Those who live near Cape Town should not miss this opportunity of hearing this talented speaker and of seeing her films.

* * *

A Japanese Member's Success with our Seeds

Membership of the Botanical Society extends all over the world and many letters are received from members about their successes with our seeds. A member living in Japan, for instance, has written in most explanatory terms of the germination of our succulent seeds. He is evidently extremely interested and most certainly a great enthusiast for he has taken great pains in preparing graphs and tables of time required, temperatures, soil mixtures, plant hormones applied, etc.

He has informed us that germination commenced within five days of sowing and ceased after two weeks. Ten days later, however, the seed-beds were watered with a 0·002 per cent solution of the plant hormone—'naphthaline acetic acid sodium salt'—and germination commenced again the following day. After a second period of inactivity the hormone was again applied and with similar or even more successful results. Good luck to you, Mr. Kazua Obuki! We hope that others will follow your example in experimenting with South African plants.

* * *

Interest in the Pelargonium Species

In these pages on previous occasions mention has been made that our indigenous flora is often more appreciated beyond our shores than it is here in South Africa. Further evidence of this is the establishment in the United States of America of the International Geranium and Pelargonium Society. The horticultural varieties bred in America are, of course, originally from South African material. It is estimated that more than 35,000,000 plants are sold every year in the United States; one grower alone handles 1,500,000 to 3,000,000 annually of about 250 varieties.

* * *

Delegates to Botanical Congresses

Kirstenbosch is being represented at two important Conferences in 1954. One is the Eighth International Botanical Congress in Paris in July at which Professor R. S. Adamson will be the official delegate of the Society and of the National Botanic Gardens at Kirstenbosch and Worcester. The other is the Royal Horticultural Society's Sesquicentenary Celebrations which will be held in London, soon after the Paris Conference. The Botanical Society's representative will be Mr. D. R. D'Ewes who will present an Address of Congratulation.

* * *

Deviation of Rhodes Drive?

Visitors to Kirstenbosch are increasing steadily and the car park is not able to accommodate all the cars which arrive at week-ends. A new park will, therefore, have to be laid out. The most suitable site would be on that part of Kirstenbosch which lies below the Rhodes Drive. This, alas, would create additional difficulties because visitors would have to cross a busy thoroughfare along which traffic is increasing alarmingly both as regards speed and volume.

It is a thousand pities that Rhodes Drive was not originally laid out along the lowermost boundary of the Gardens. It is hoped, however, that a far-sighted policy will be adopted and that the road will eventually be deviated. If this is done the advantages which would be derived by the National Botanic Gardens would be incalculable. Major developments could then be undertaken.

* * *

Invitation to Members to Submit MSS.

Apart from this Journal published by the Botanical Society there is also the *Journal of South African Botany* which is published by the National Botanic Gardens. The latter is more technical and is issued four times each year. Members of the Botanical Society may subscribe to it at special reduced rates of £1 5*s.* 0*d.* per annum or 8*s.* 6*d.* per part. At the present time as in the past it has been very difficult to obtain sufficient copy for these two Journals with the result that they have been printed rather later than desired, sometimes with the disapproval of the readers and always to the dissatisfaction and embarrassment of the Editor! Members, therefore, are cordially invited to submit suitable material for publication in these Journals. A special appeal is made to staff members and senior students in the botany departments of the South African universities for articles. We should also like to receive contributions from readers outside South Africa who are growing South African plants in their gardens.

* * *

Know your Mushrooms!

Several excellent books on flora, fauna and natural science in general have been published during the last few years and two of the latest deserve special mention. They are the small handbooks written by Miss Edith L. Stephens, *Some South African Edible Fungi* and *Some South African Poisonous and Inedible Fungi*, published by Longmans, Green and Co., price 6*s.* each. She warns the public not to be misled by relying on some of the popular and doubtful methods of determining which species of mushroom or toadstool are harmless and which poisonous. Her advice is that you should not attempt to eat any but the kinds shown or described in her book on edible fungi unless you have had the specimens passed as harmless by someone who has tried them personally or has made a study of the subject. These booklets have been written by a botanist who knows her subject, and by consulting the descriptions and the illustrations which have been masterfully executed by Mary Maytham Kidd anyone, even with no botanical knowledge, should be able to recognize the safe species. Miss Stephens requests, however, that if anyone wishes to experiment by eating untested varieties, he should leave an uncooked specimen for identification so that scientific knowledge could be extended if the experiment proved disastrous! Miss Stephens explains that although most of the species described in her books occur in other parts of South Africa, they were all studies in the south-western Cape. She has hinted that certain fungi from the east and north of the Union may be described in a later book; we eagerly look forward to its publication. Offers of fresh specimens for study and illustration will be welcome. Her address is: 'Hazeldene', Belmont Road, Rondebosch, C.P.

* * *

Booklets on Protected Wild Flowers

Specimens of species of wild flowers protected in the Cape Province are being supplied regularly to the Department of Nature Conservation of the Cape Provincial Administration for illustration in Part 3 of the booklet *Protected Wild Flowers of the Cape Province.* The first two parts have already been published and we look forward to seeing the third. These booklets, obtainable from The Controller of Stores, Cape Provincial Administration, 34, Roeland Street, Cape Town, cost only 2*s.* 6*d.* each.

* * *

'*Wild Flowers of the Cape of Good Hope*'

The Publications Committee of this book which was published by the Botanical Society in 1951, are happy to announce that sales of this work continue steadily. Approximately 5,000 copies have been sold to date. Only a relatively small deficit of the Department of

Education, Arts and Science Loan of £2,000 now exists, and this will be repaid during 1954. All the original colour plates which were painted for this book by Mrs. E. Garrett Rice have been sold. For the benefit of our new members *Wild Flowers of the Cape of Good Hope* by E. Garrett Rice and R. H. Compton is a magnificent book containing 250 full-page colour plates depicting 444 species of wild flowers almost all of which grow within 100 miles radius of Cape Town. Copies of this book may be obtained from any bookseller, price, in South Africa £2 10*s*. 0*d*. Copies may also be obtained from the Botanical Society's office at Kirstenbosch.

* * *

'Gardening in Southern Africa'

This is the title of Mrs. Una van der Spuy's very interesting book published in 1953. Nearly every aspect of gardening in South Africa is covered in this work, such problems as diseases and pests being tackled soundly and scientifically. The 250 excellent illustrations by Anthony van der Spuy are of the greatest assistance to the reader in identifying the plants mentioned. For the lover of our indigenous plants there is a whole chapter devoted to the cultivation of some of our most beautiful flowers.

This book contains a wealth of information and is profusely illustrated with line drawings and 13 full-page plates in colour and black and white. Price 21*s*., postage 1*s*., obtainable from the publishers, Juta & Co., Ltd., and all booksellers. Mrs. van der Spuy is now busy on a book dealing with trees and shrubs to which we eagerly look forward.

* * *

Wedding Bells

Miss M. C. Heginbotham, Treasurer and Librarian of the National Botanic Gardens since May 1948, resigned her post on 5 April 1954 to take on the more important role of a wife! All her associates at Kirstenbosch attended Christ's Church, Kenilworth, Cape, on 21 April for her marriage to Mr. H. W. Schirach. The staff's wedding present to Miss Heginbotham was an oak tea-wagon.

Mrs. Schirach has always been a very keen amateur photographer, a hobby ardently shared by her husband. Members will recall with pleasure the beauty of her colour slides of South African flowers and scenes which she showed at our meetings. We shall miss Marjorie at Kirstenbosch, her helpful co-operation and cheerful disposition endearing her to all the staff whose good wishes go with her and her husband for many years of happiness together.

* * *

Appeal for New Members

It is sincerely regretted that there was a decrease in the number of new members enrolled during 1953; whereas 416 joined during 1952, only 304 were enrolled during 1953. To offset these figures and in order to make sure that 1954 will be more satisfactory, the Secretary is hoping, firstly that members will respond as promptly as possible to their subscription reminders sent, and secondly, that every member will try to interest at least one friend to join the Society this year. A membership form is enclosed with this Journal. The total membership at the end of 1953 was 2,670. The Society needs many more! Here is an extract from a letter of a member in Victoria, Australia, 'I shall also be sending you in a week or so the cost of membership for a particular friend of mine who is very keen on South African flowers. I am making him a present of it as I know how appreciative he will be. . . . You may be sure that I shall not lose any opportunity to further your interests in this country.' Would others like to follow this example?

* * *

From the Secretary's Chair

Judging by the many kind remarks received from members there is no doubt whatever that the meetings arranged each year are thoroughly enjoyed by all those who are able to attend these fixtures. More and new ideas are, however, required and would be welcomed by the Secretary should you care to write to her. She would also like to hear from any members who have films or slides which they would be willing to show. Incidentally, the Society hopes in time to build up its own film library and donations of equipment, films and slides from any members having 'spares' would be most gratefully received.

* * *

Members' Gardens

Quite one of the most popular items planned each year is 'A Visit to a Member's Garden'. Our hosts and hostesses on these occasions have spared no effort to make these visits very happy and enjoyable. Ideas have been sought and exchanged and many new gardening friends made. The Secretary would be very happy indeed to hear from more members who would be willing to offer similar invitations to their gardens.

Meanwhile we anticipate with pleasure our visit to Mr. and Mrs. A. Sieger's garden at Somerset West on 6 November. We meet at the G.P.O., Somerset West, at 2.30 p.m.

* * *

Subscriptions Due

The Secretary is experiencing great difficulty in getting in members' subscriptions in spite of reminders having been sent out. Sending out additional reminders takes up a great deal of time and, of course, involves extra expense. In order to keep the Secretary happy, therefore, pay your subs. as quickly as possible please.

* * *

Obituary

We regret to record the death of the following:

Dr. Francis Brett-Young on 28 March 1954; world-famous author and a keen supporter of the Society.

Mrs. Bella Peers of Fish Hoek on 1 February 1954; widow of Mr. Victor S. Peers who discovered the 'Fish Hoek Man'.

Miss H. J. Davison (Mrs. Henderson) on 23 April 1954; the first Secretary of the National Botanic Gardens, Kirstenbosch, from its inception in 1913 until August 1920.

Mrs. M. E. Whitehead of Mooi River, Natal, a Life Member of the Society.

Death of First Curator of The Karoo Garden

Joseph Archer, who died on 31 January 1954, was one of the first whole-hearted enthusiasts for the use of South African succulent plants in gardens. He was for several years railway stationmaster at Matjesfontein and was responsible for the rock-gardens which were a feature of the station, planted up with the local succulent flora. These rock-gardens repeatedly won the prize given by the Railways (under Sir William Hoy) for the best station garden in the Union. After leaving the Railway service he was appointed Curator of the newly established Karoo Garden at Whitehill and threw himself into the work with the greatest energy, facing all the difficulties in a way only a true enthusiast could do. After his retirement from Whitehill no one could be found to take his place, until eventually the Garden was transferred to a more easily worked site at Worcester. Archer (with his friend Frank Frith, Railway Horticulturist) was largely responsible for the vogue which the cultivation of South African succulent plants in South Africa has enjoyed. He was a well-known personality in the Karoo and lost no opportunity of collecting specimens and of interesting people in his all-absorbing passion for our marvellous succulent flora. He is commemorated botanically by some noteworthy species, particularly *Crassula Archeri* and *Kleinia Archeri*, and by some other plants. The Karoo Garden is a living memorial to the devotion with which he nursed it through its most precarious history.

Can We Preserve the Cape Flora?

By R. S. ADAMSON

THE flora of the south-western part of the Cape Province is unique. It is exceedingly rich and contains a very large proportion of peculiar plants. It is a flora of unsurpassed interest to botanists and for the layman one that contains a high proportion of strikingly beautiful species.

This flora is by too many taken for granted as just a part of the background of our country. Everyone realizes and deplores the disappearance of the larger animals in the region, but too few realize that an exactly similar though slower disappearance of plants is taking place. Just like animals, plants are living beings and can only maintain themselves where the conditions are suitable to their life needs. Where the conditions are altered to any large extent they give way.

In a country with a rapidly expanding population and developing industries, destruction of plant habitats is inevitable. The extension of residential or factory areas in or near towns and the expansion of agricultural activities in the near-by country must destroy tracts once inhabited by plants. That this is so is clear. A few years ago there was published a *Flora of the Cape Peninsula*. Within the short period since then a quite considerable extent of land has lost its native flora altogether, such as the Cape Flats adjacent to the city, Paarden Island and other areas. Quite an appreciable list of species can be drawn up which have now ceased to exist within the boundaries of the Peninsula.

Such complete destruction of plant habitats as follows building or agriculture, however severe, is not by any means the only threat to our flora. Of such the most active are veld-burning and the spread of introduced species. Among the latter such plants as the wattles, hakea, cluster pine and others are tending to spread at times extensively at the expense of the native flora. Some are already a real menace to the indigenous plants.

It is a notable feature that when a visitor is taken for a drive in the neighbourhood of Cape Town, the plants most prominent are in nearly all cases not indigenous, oaks, pines and even more wattles predominate. Wattles are especially aggressive and widespread. The four or five species of Australian wattle have become very completely established and commonly completely dominate the native plants. They were originally introduced as a means of fixing the shifting sands of the Cape Flats. In this they have been successful, but have spread far and wide. The prevailing method of veld management—burning—assists the spread. Wattle seeds are extremely fire resistant and germinate in quantity in the following absence of competition. While the wattles have proved a boon to the local inhabitants by providing a much-needed supply of firewood, from the standpoint of the native flora they are an unmitigated curse. Wattles have now become dominant and are destroying the native flora in too many places to mention. The coastal plains both north and east of Table Bay have become very severely infested. As one example, a few years ago a search was made of the region between Onrust and the Bot River lagoon in an attempt to rediscover certain species found by Schlechter about fifty years ago. Over 90 per cent of the area was a dense thicket of wattles often too thick to penetrate. Other examples that come to mind at once are the hills between Fish Hoek and Kommetjie and Michell's Pass.

Other aliens, hakea or cluster pine, are behaving in the same way but are not quite so aggressive as the wattles, though being larger are perhaps a little more obvious. It is, however, so serious that hakea has been proclaimed a noxious weed. Unfortunately the expense of clearing infested land is such that the ordinance has never been fully enforced. Unless some active steps are taken to combat the advance of these aliens quite a number of native species are in imminent danger of extinction.

The threat to the native flora from human activities and from the advance of aliens is greatest on the low grounds. The mountains with their steep slopes and poor and usually shallow soils are not suited to cultivation and are less immediately threatened. It is true that the mountain slopes are used for forest plantations and that the cluster pine has spread extensively from these, reaching almost the highest summits. Plantations are, however, local and necessary, and as the growing of cluster pine is lessening, the danger is one that can be combated without undue difficulty. On the mountains the greatest danger to the flora is burning, and especially frequently recurrent burning. The most obvious sign of this is the steady regression and local disappearance of the forests in mountain kloofs. On the open slopes the effects are less obvious but equally real. Destruction of the vegetation by fire inevitably causes loss of soil. If fires recur at intervals that are short the vegetation has no chance or reaccumulating soil and species that regenerate from seeds may easily be exterminated by destruction before the next crop of seed is formed. Many proteas, for example, require at least eight to ten years to produce a new crop of seed. Fires recurring every five or six years would soon finish them. The extreme bareness of the mountains especially in the regions of relatively high rainfall is the result of continued frequent fire destruction.

In a climate with seasonal rainfall and dry summers it is almost impossible to eliminate fire altogether. So many accidents may start a fire that total protection is not practicable. But if the successive fires could be at intervals sufficiently long to allow full regeneration of the vegetation no serious harm should result. It is the recurrence at short intervals that is so destructive.

At the moment it certainly looks as if a considerable number of species in the Cape flora were liable to extinction under one or more of the prevailing menaces: building, cultivation, spread of aliens, or indiscriminate veld-burning. If these are not to be lost completely it certainly appears that active steps are needed. It is surely our duty to hand on as much as possible of our unique heritage to succeeding generations.

Fortunately it is definitely beginning to be felt that protection for the flora is necessary. The most effective means is the setting aside of tracts of land as flower reserves in which the native flora is maintained and as far as possible protected. The Department of Forestry has set a fine example in this direction. In each of its plantation areas there is a botanical reserve which is protected both from flower pickers and from fire. This example is being followed elsewhere and a number of reserves have now been or are in process of being established. Even so their extent is still small for adequate protection. Some years ago Wicht, dealing with mountain vegetation in a report on veld-burning and protection for the Royal Society of South Africa, advocated the creation of a number of large reserves. It is a policy all are hoping will some day come to fruition.

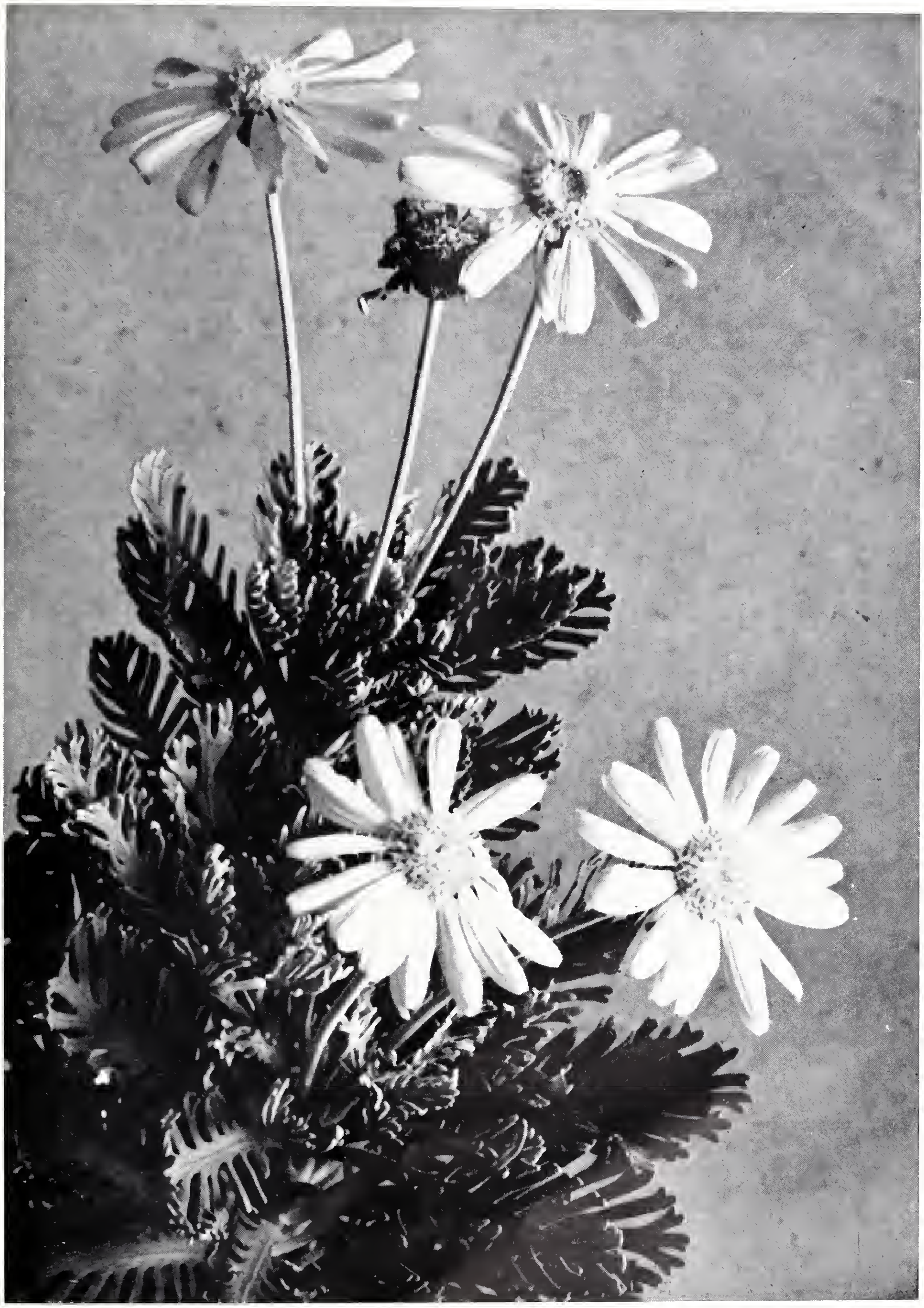
The existing reserves and nearly all those proposed are in mountain areas. The low-lying lands also possess a very distinctive flora which includes a number of interesting endemic species. They are in many ways in more immediate danger than the mountains and it is very much to be hoped that some tracts of this country so far uncultivated may become the sites of real reserves.

It is unfortunate that in some of the existing reserves the objective seems to be more the protection or re-establishment of the wild animals than consideration of the flora. An increase in the animal population in a limited area often has deleterious effects on the flora unless a definite and accurate balance is maintained.

Quite apart from the creation and maintenance of reserves, there are measures for protection of the flora in the wild flower ordinances of the Provincial Council. The Botanical Society has an active Wild Flower Protection Committee which is largely concerned with the enforcement of the ordinances. Of necessity the activities here are concerned with the prevention of destruction by collection for sale.

A characteristic feature of the Cape flora is the number of local species. These are so numerous that no system of protection could cover them all. Many are in distinct danger of extirpation. The only adequate method of preservation seems to be to cultivate such in the Botanic Garden. The species concerned are not by any means all of a kind that makes them obvious for cultivation, but many of the less conspicuous ones are botanically of great interest. It is suggested that Kirstenbosch might be made the sanctuary for species in our flora that are in some danger in their own habitats. The example of the Blushing Bride is well known to all. The suggestion is that the same procedure be extended to large numbers of threatened species. If this were done Kirstenbosch would indeed become a living herbarium of the Cape flora and quite unique for the study of the species.

The flora of the south-western Cape is so unique and of such immense botanical interest that every effort should be made to protect and preserve it. The cultivation and perpetuation of examples of plants that are in immediate danger seems a clear first step. Doing so would without doubt redound to the credit of Kirstenbosch and at the same time greatly extend the botanical interest and importance of the Gardens.



(Photo: C. A. Luckhoff)

PLATE 3. *Euryops Pectinatus*, Table Mountain.

Summer Flowers on the Jonkershoek Mountains

By MARGARET L. WICHT

WE climbed the mountains one midsummer to see our Cape flowers blooming in the settings Nature had intended for them. Our flora is one of the richest in the world, and the Jonkershoek mountains have their share of beautiful and rare flowers. We commenced our climb at daybreak and the hazy morning sky was streaked with the first rays of dawn when we set forth. Our goal was Victoria Peak, which is over 5,200 feet, and the highest peak in the Jonkershoek range. It is often white with snow in winter, and rises desolate and windswept from the crest of the Dwarsberg. The rest of our walk round the valley was indeed in strange contrast to the conditions of harshness and poor floral development we saw on Victoria Peak that day.

As we climbed along the path to Langrivier, I breathed deeply, for the air was fresh and pure—and then I caught sight of the nerines! The brilliant ruby-red flowers, overlaid with a bloom of the fine 'gold-dust', which is found on all our red-flowering species, were growing on the rocky scree among the 'fynbos', which covered the mountain slope above and below the path. Having crossed the Langrivier ravine, we continued along the path which passes beneath the precipices of Cathedral Peak. On the rocky ledges we again saw several nerine blooms, making a red and gold pattern against the grey, lichen-encrusted cliff face. We also saw, much to our surprise, a late-flowering specimen of the rare and beautiful *Gladiolus nerineoides* on the cliff face. It blooms on delicately drooping stems, and is so named because of its colouring reminiscent of the nerine. This rare flower blooms in the mist belt, at an altitude of between 2,000 and 3,000 feet, and never many flowers are seen, except after fires have occurred.

Our lovely nerines are certainly best seen when flowering in Nature. Those of us who have seen them growing in their natural habitat, and have also seen cut specimens of the cultivated variety in florists' shops cannot fail to notice the difference. The blooms, without their natural background of 'fynbos', even though they do appear perfect, are no more than a mere reminder of a beauty that is more complete and satisfying than anything that could be achieved in an artificial environment. The mountaineer, passing a bowl of nerine blooms in the florists' window, will stop to admire them, but in his mind's eye he will see them making a brilliant display on the mountain slopes where *Nerine sarniensis* is at home. He will often recall the scene to mind, and will never forget that this is how our great wealth of flowers ought to be preserved so that they will always be there for all of us to enjoy.

We continued our climb along the path which led to the top of the Dwarsberg. On the open slopes in front of us we saw the giant *Protea cynaroides*, still flowering. The satin-pink flower heads were attracting numerous small, brightly coloured sugarbirds. They were seen sipping nectar from the cup of flowers with their long shiny beaks.

There was quiet peace and beauty on the top of the mountain. From there we looked down into the green basin of the Jonkershoek valley, with the Eerste River showing flashes of silver through the trees lining its banks, and we had a clear view of Table Mountain in the far distance. There were sheets of bright pink erica flowering profusely. *Erica ventricosa*, *Erica fastigiata* and *Erica transparens* seemed to be the three main species.

Wandering on we came to the Disa stream on top of the Dwarsberg, which is the source of the Riviersonderend, and flows down to the wide valley on the far side of the mountain in a succession of quiet pools and miniature waterfalls. *Disa uniflora*, the most famous of the disas, lines the stream-banks, and it was with great joy that we beheld a cluster of these bright orchids casting their red reflections on the surface of a clear, calm pool. Walking some distance along the banks of the Disa stream, we came to the foot of Victoria Peak. Great fortresses of rock closed in all round us, as we made the long ascent to the summit. It is moist and cool in the crevices of these rocky buttresses, and the sun rarely shines on the plant-life specially adapted to growing in these secluded haunts.

Clambering up a narrow cleft in the precipitous south side of Victoria Peak we found a rare species of dwarf tongue fern, *Polypodium magellanicum.* The only other recorded specimens of this almost extinct species came from Tasmania and Tierra del Fuego, a curious distribution! Because it only grows in cool moist places on these most southernly points of land, it is thought to be a remnant of a vegetation that flourished in a moister, colder prehistoric climate.

In the veld between the rocks very attractive bushes of the white, starry-flowered *Helichrysum gemmiferum* with grey foliage were growing, and the grey-green of the veld was enlivened by a number of brilliant spikes of the very beautiful *Kniphofia tabularis*, an uncommon species found only at fairly high altitudes in wet, cold localities, where it is visited by the little Malachite Sunbird and the large mountain butterfly.

On these high mountains there appear to be two groups of plants. Those that are tender and delicate and need the cool, moist, sheltered conditions found in the shadows on the southern aspects of the peaks, and those that are specially adapted to survive on the exposed rock faces where they are sheared and shorn into dense tussock and rosette forms by the roaring north-west gales in winter and the south-easters in summer. Plants of the second group can survive almost complete drying out, but are also able, through moisture-absorbing hairs and other special leaf structures, to utilize the water vapour in the clouds that so often envelop the peaks. Thus a minute *Oldenburgia* species, *Oldenburgia paradoxa*, with hard tomentose leaves in dense rosettes was able to subsist even on these hard exposed crags. Very different is the giant, almost tree-like, species of *Oldenburgia* with large flower heads that grows on the hills near Grahamstown.

We reached the summit of Victoria Peak in time for lunch. The harsh, barren Table Mountain sandstone surface of this desolate peak has been scoured by the fierce howling winds for centuries. The only really noticeable plant-life were the low tussocks of a somewhat shrivelled grass and a low, sprawling, small species of reddish-brown protea—*Protea oleracea*—which seemed to be 'groping with blind fingers' in order to prevent itself from being torn off the summit and hurled into the valley below by the wind.

Victoria Peak holds a weird fascination for me and I felt that I must return again to try to solve the mysteries in which this barren peak seems to be shrouded! We paused to admire the perfect view, and we discerned a great many well-known landmarks on the wide horizon with the coastline of the Atlantic ocean on the west and the Langeberge on the inland side to the east. Then we descended to the ridge of the Dwarsberg.

On an exposed rock on the crest of the Dwarsberg—so often covered with south-east clouds—we found *Bryomorphe lycopodioides*, growing in tiny, grey, moss-like cushions in rocky depressions. This minute composite owes its existence to the south-east clouds from which its moss-like leaves can absorb moisture.

We wended our way homewards down the zigzag path which passes the Second Waterfall. A few blooms of the red rochea—*Rochea coccinea*—were flowering, fragrant and jewel-like in their bright brilliance on the rocky cliff face. It was so named by de Candolle after a Frenchman—François de la Roche—who had become famous for his descriptions of plants.

Descending quickly down this rough path we turned to the left at the foot of the Dwarsberg and clambered up the gorge which leads to the Second Waterfall, the source of the Eerste River. The precipices overhanging the tumbling amber-coloured waters were lined with tree ferns—*Hemitelia capensis*—and on the moist, green, moss-covered ledges we found an enchanting dwarf fern —*Hymenophyllum tunbridgensis*—so called because it was first found near Tunbridge in England. We found the tongue fern—*Elaphoglossum conforme*—growing among the mosses and liverworts.

It was at the Second Waterfall that Dr. Rudolf Marloth found one of our rarest and most interesting botanical treasures—a little plant known as *Charadrophila capensis* or the 'Cape plant which loves the kloof'. It was, without a doubt, an exciting day for Marloth when this delicate powder-blue flower with soft velvety foliage was found to be so unique and interesting. It is, like the little tongue fern on the cool face of Victoria Peak, another botanical remnant from an earlier more humid age, which has survived in this dark, precipitous canyon. It has been recorded only from the two waterfalls at Jonkershoek and one other dark, moist kloof.

On the face of the high waterfall we again saw the red disa growing in clusters in the moist, verdant grasses, and intertwining in all the plant-growth on the moist, green cliff under the fine spray and dripping water was the white, yellow-centred composite, *Osmites angustifolia*, the straggling leaves and stems smelling strangely of carbide.

At last we had to tear ourselves away from all this beauty. The sun was setting and already the mountains were taking on an air of quiet repose. We scrambled down away from the waterfall and out of the darkening kloof. Walking home along the well-worn path in the dusk we could still see patches of the small deep-blue *Agapanthus africanus* and here and there we passed

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MEMBERS' CALENDAR OF MEETINGS FOR 1954

Tuesday, 23 *March*, 8.15 p.m. Lecture Hall, Kirstenbosch.
Annual General Meeting.
Colour Slides depicting the Panorama of the Cape by Mr. FitzRoy du Toit.

Saturday, 15 *May*, 3 p.m.
Visit to Mr. Bernard Carp's Wild Flower Nursery, 'Succulenta Nurseries', Hout Bay. (Meet Hout Bay Hotel, 2.45 p.m.)

Tuesday, 15 *June*, 8.15 p.m. Lecture Hall, Kirstenbosch.
The Metasequoia glyptostroboides, 'The Living Fossil Tree'. Talk by Prof. H. B. Rycroft, Director of Kirstenbosch.

Tuesday, 17 *August*, 8.15 p.m. Lecture Hall, Kirstenbosch.
'Garden Lawns.' Illustrated Talk and Demonstrations by Mr. A. J. M. Middlemost.

Saturday, 11 *September*, 3 p.m.
Anniversary Meeting, Karoo Garden, Worcester.
Tour of Garden by Mr. J. Thudichum, Curator.

Sunday, 26 *September*. (Meet Forest Hotel, Grabouw, 11.30 a.m.)
A Botanical Ramble through Houw Hoek Forest Reserve. Conducted by Mr. C. St. L. Searle and Dr. G. J. Lewis.

Saturday, 9 *October*, 11 a.m.
Annual Gathering of Members, New Lawn, Kirstenbosch. Followed by a conducted tour of Kirstenbosch.

Saturday, 6 *November*, 3 p.m.
A Visit to a Member's Garden. Mr. and Mrs. A. H. Sieger, Forest Lodge, Parel Vallei, Somerset West. (Meet G.P.O., Somerset West, 2.30 p.m.)

Members are cordially invited to bring their friends along to the above Meetings.
Refreshments served at all Meetings.

N.B.—Refer to page 7 (Visit of American Lecturer) for details of two additional meetings in September.

specimens of the scarlet, hairy erica—*Erica cerinthoides.* It had been a long and strenuous day but we had been richly rewarded and we were carrying with us a treasure of beautiful memories of our flowers in Nature's perfect settings which would regale our thoughts for many a year to come. We glanced behind us for the last time towards the summits of those grand Jonkershoek mountains which we could still see in the silver light of the full moon.

How beautiful is the night!
A dewy freshness fills the silent air;
No mist obscures, nor cloud, nor speck, nor stain,
Breaks the serene of heaven;
In full-orbed glory yonder moon divine
Rolls through the dark blue depths.

R. SOUTHEY (THALABA)

A Ramble Through Kirstenbosch

By WINIFRED N. HALL

BEFORE we commence our ramble, let us recall for a moment the history of Kirstenbosch.

The National Botanic Gardens of South Africa, perhaps better known as 'Kirstenbosch', were established in 1913. It is interesting to record, however, the years before this date.

Nothing definite is known of the origin of the name 'Kirstenbosch' but it is probably derived from the family name of Kirsten. Mr. Kirsten was Company's Resident in False Bay in 1780 and records show that a Mr. Kirsten owned a piece of land near Kirstenbosch in 1796. In the early days of the settlement Kirstenbosch was in government hands, the forests providing timber for shipbuilding and other purposes.

Kirstenbosch remained government land until 1811, when about 107 morgen of land were granted to Christopher Bird, and a similar amount to Henry Alexander. Alexander succeeded Andrew Barnard as Colonial Secretary and built himself a house on the site of the present Tea House. Christopher Bird occupied a house said to have been built by Mr. Kirsten, the ruins of which can still be seen a few hundred yards from the information office, towards the mountain.

In his property lay a fresh-water spring which has since been converted into the little oval bath and is to-day perhaps one of the most charming features of the Gardens. It is known as 'Lady Anne Barnard's Bath'.

Henry Alexander died in 1818, Christopher Bird left for England a few years later and Kirstenbosch reverted to the government again. In 1823 it was assigned to a Mr. D. G. Eksteen. The Eksteens united with the Cloete family by marriage, and in 1835 Kirstenbosch became the property of Mr. H. Cloete. In 1893 Kirstenbosch was bought by Cecil Rhodes. At his death in 1902, Kirstenbosch, as part of his Groote Schuur estate, once more became crown land in trust for the people of South Africa.

Very little was done, however, to maintain the property until 1913, when Kirstenbosch became the site of the National Botanic Gardens. Professor H. H. W. Pearson, the first Director of Kirstenbosch, did not, it is sad to record, survive their establishment long, for he died in 1916 at the age of 46, and is buried in a grave overlooking the cycad amphitheatre. A tribute to his energy and enthusiasm in the establishment of the Gardens is to be found in his epitaph which reads 'Ye who seek his monument, look around'.

Kirstenbosch is controlled by a Board of Trustees. Four of these are appointed by the Union Government, one by the City Council of Cape Town, and one by the Botanical Society of South Africa. Simultaneously with the establishment of Kirstenbosch, the Botanical Society was founded to give general and financial support towards the Gardens. The subscriptions of the members form one of the grants passed over to the Gardens each year. The Karoo Garden is a branch of the National Botanic Gardens and is situated at Worcester. Kirstenbosch, apart from being one of the most beautiful botanic gardens in the world, is also unique in that it is devoted entirely to the cultivation of our indigenous flora.

The Gardens are beautiful at any time of the year, but they are undoubtedly at their best in September and October. This is springtime in the Cape, and Kirstenbosch, in all its glory, is the mecca for thousands of visitors daily.

Let us commence our ramble round the Gardens from our starting point at the car park, which is generously shaded by oak trees—reminders of the early European settlers in the Cape. We first cross the old lawn, pausing awhile to admire the water-lilies (*Nymphaea* spp., etc.) in the pond. For the interest of the younger visitors are the many goldfish darting hither and thither in the cool waters. From this spot we can gaze in wonderment at the beauty of the setting of Kirstenbosch, framed as it is by the grandeur of the eastern slopes of Table Mountain. High up to our left, and across the belt of silver trees, we see the red roof of the herbarium, now called the Compton Herbarium, where botanical specimens are preserved and classified for future use to the botanical world.

As we stand on the lawn facing Table Mountain, we cannot fail to notice the blaze of colour provided by the annuals on the slopes to our left. These are a mere selection of the many showy daisy-like annuals for which the western Cape is world famous. These include Ursinias, Dimorphothecas, Osteospermums, Felicias, Mauve Senecios, and the incomparable Blue Flax (Heliophila). Forming a boundary to the cultivated area is the avenue of camphor trees said to have been planted by Cecil Rhodes and under the shade of which a road leads steeply to the herbarium. From our vantage point on the lawn we can admire the indescribable brilliance of the Vygies (Mesembryanthemums) which are shown to their best advantage on a sun-warmed slope. It is difficult to find any other flowers to match their vivid colouring and dazzling lustre.

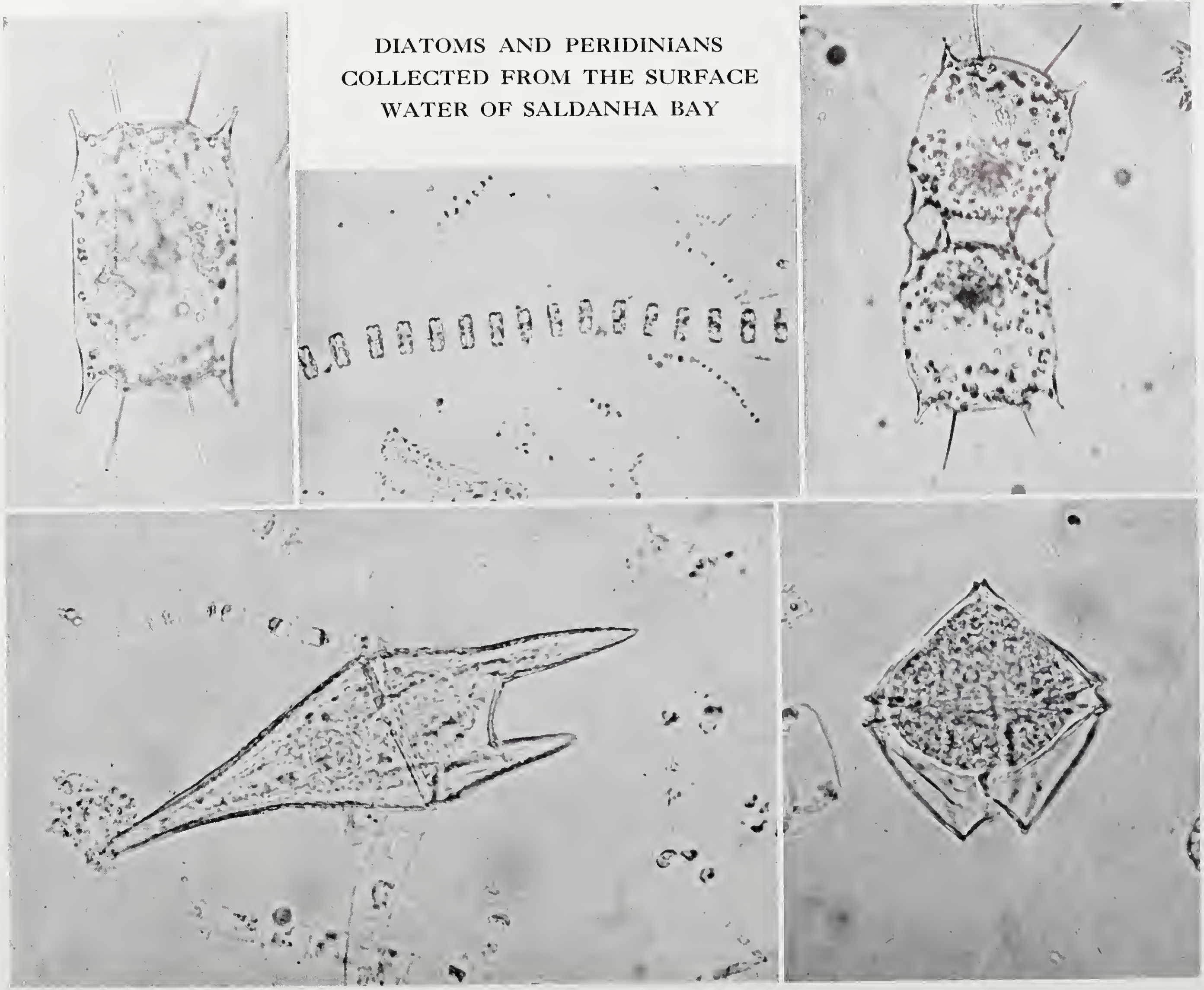
Climbing above this kaleidoscope of reds, orange, yellows and numerous shades of mauve, we arrive at the J. W. Mathews Rock Garden which contains an excellent collection of succulents from all parts of the Union. Mr. Mathews, after whom the rock garden was named, was the first curator of Kirstenbosch and this well-constructed rockery is only one of the examples of the hard work undertaken by him in those early days. The rock garden has a delightful setting, framed as it is by the incomparable silver trees (*Leucadendron argenteum*). Here also we see a portion of the 'wild almond hedge' (*Brabeium stellatifolium*) planted by Jan van Riebeeck.

As we approach the dell we pass the resting-place of Professor Pearson with its simple cross and moving epitaph. Below we see the cool and shady paths through which the spring which flows from Lady Anne Barnard's bath meanders and which is a particularly delightful area during the summer months. Part of the dell is surrounded by the cycad amphitheatre. The cycads growing here are considered to be the finest collection in existence. The protea family is well represented and the various types have been widely planted on the slopes leading up towards the mountain.

Descending towards our starting point we pass through the heath garden, where representatives of this large and beautiful group of plants may be seen growing in a very natural manner.

We may spend many happy hours at Kirstenbosch enjoying the beauties of the Gardens, but a glance at the sundial, which is flanked by a hedge of blue plumbago, reminds us that time is passing, and as we cross the little rustic bridge on our way to the Tea House for refreshment, and glance at the stately lecture hall on our left, we reflect upon the fortunate young South Africans who come to Kirstenbosch daily from schools within the Cape Peninsula for nature study classes. This is surely one of the finest ways we have of ensuring that our floral heritage, so jealously guarded and cared for in the National Botanic Gardens of South Africa, will live on for those who follow us.

DIATOMS AND PERIDINIANS COLLECTED FROM THE SURFACE WATER OF SALDANHA BAY



Top left: Biddulphia, × 380. Top centre: Thalassiosira, × 200. Top right: Biddulphia, × 250.
Bottom left: Ceratium, × 500. Bottom right: Peridinium, × 500.

Plants of Land and Sea

By WM. EDWYN ISAAC

THERE is popular recognition of distinct types of animals with different basic plans of construction such as insects, worms and vertebrates. Further, there is popular recognition of important sub-groups in the case of insects where, for example, butterflies and beetles are distinguished. This is true also of vertebrates where birds, fishes and mammals are likewise popularly recognized. Less clearly, perhaps, different basic types of construction are recognized among plants. Thus, however vaguely, it is generally recognized that mosses, ferns, mushrooms, lichens and seaweeds do not belong very closely together and that they are all very different from those plants which bear flowers: the flowering plants or Angiosperms.

On land, sometimes plants other than Angiosperms may be prominent or may even be the most prominent plants in the vegetation. This is especially true of cone-bearing trees and such related forms as *Podocarpus* (yellow-wood). Thus, over considerable areas of the cold temperate zone of the Northern hemisphere, pines, spruces, larches and firs dominate the landscape. These plants are Gymnosperms which are seed plants of somewhat different anatomy from the Angiosperms and which bear their seeds naked in the sense that the seeds are not enclosed in a seed-box or ovary. The Gymnosperms (to which the Cycads also belong) and the Angiosperms are the only living plants which bear seeds but, while in Gymnosperms the seeds are naked, in Angiosperms they are enclosed in an ovary. In South Africa the vegetation is sometimes dominated by pine trees which have been introduced into the Union, there being no native species of pine. In native forest vegetation *Podocarpus* may be prominent or even dominant as in the Knysna region and the mountain forests of the Eastern Province. Other kinds of non-flowering plants may also sometimes be very prominent or dominant. This is true of the cosmopolitan bracken fern (*Pteridium aquilinum*) in parts of Britain and locally this plant may be prominent in the vegetation in South Africa. Again there is a small stretch of forest which I know on the Hog's Back where the ground vegetation is dominated by a club-moss (*Lycopodium clavatum*). As a last example it may be recalled that in parts of the northern tundra the vegetation consists mostly of lichens. It may also be noted in passing that in distant geological periods before the advent of Angiosperms, the flora and vegetation were made up of plants having different types of construction. Thus in the Carboniferous period the dominant trees had fundamentally the same pattern of construction as is now found among the lowly club-mosses and horsetails.

On the contemporary land surfaces animals of a few distinct patterns of construction are commonly met with such as worms, insects and vertebrates. The land vegetation on the other hand is dominated by and large by one group of plants—the Angiosperms. The Angiosperms present a marvellous and bewildering variety of forms which, however, are forms of one fundamental pattern. This fact might be expressed by stating that essentially they are variations on one major theme. The differences are in no way comparable with the differences between insects and vertebrates or between mosses and ferns. The greatest differences are more on a level with those between birds, reptiles and mammals.

In addition to the plants which are seen above the soil surface there is a very numerous population of plants in the soil itself; chiefly bacteria and fungi but actinomycetes and algae also occur. This soil flora is of vital importance to the continued existence of plants and animals for by its activities dead plants and animals are decomposed with the formation, among other things, of nitrates and humus. Soil bacteria also play an important role in fixing atmospheric nitrogen so replenishing the supplies of inorganic nitrogen compounds in the soil.

A range of plant types have adopted an aquatic existence in the fresh waters of lakes, pools, rivers and streams. There are aquatic mosses such as *Wardia hygrometrica* common in some of the streams at Bain's Kloof and aquatic ferns, species of *Azolla* and *Marsilea* being found in the Union. There are aquatic fungi which keepers of goldfish sometimes learn to their cost. There is no true aquatic Gymnosperm although the swamp cyprus (*Taxodium*) is found in marshy habitats and in shallow water but Angiosperms are a prominent feature of fresh waters. Aquatic Angiosperms have their vegetative parts submerged to a varying extent but in general the flowers have not become adapted to existence below the surface of the water. The flowers are usually borne at or just above the surface of the water as in water-lilies and in the locally common wateruintjie (*Aponogeton distachyus*) or well above the water surface as in species of *Potamogeton*. Pollination is mostly thus, by the agency of wind or insects. Also prominent in fresh waters are various kinds of algae. Many of these are of microscopic size such as the Desmids and Diatoms while the beautiful colonial *Volvox*, although small, is visible to the naked eye. Other fresh-water algae are filamentous including *Spirogyra* and *Sphaeroplea*, both of which may be so abundant as to form dense mats and scums in the upper layers of the water. Individually these plants are small, although long, and are of simple construction. More complex and larger are those peculiar algae the stoneworts (*Chara* and *Nitella*).

In shallow seas, between tide levels and in estuaries, Angiosperms may be prominent or dominant especially in calm tropical waters. The mangroves are the most widely known marine Angiosperms. They occur rooted in fine mud and are covered to a greater or lesser extent by the rising tide, but the leafy crown is never submerged. They are widely distributed in the tropics but extend into subtropical and warm-temperate waters. Impoverished mangrove vegetation occurs on the eastern coasts of the Union extending southwards from the Natal coasts to the coasts of Pondoland. In addition to the mangroves and associated species there is a small group of eight genera which are submerged although they may be uncovered to a greater or lesser extent at low-tide periods. These are referred to collectively as 'sea grasses', but although they are Monocotyledons they are not true grasses. Most of the 'sea grasses' are tropical but some species occur in the seas of temperate latitudes. This is notably the case with *Zostera marina* which is very widely distributed in the Northern hemisphere. The South African species of *Zostera*, *Z. capensis*, is widely distributed on South African coasts. It forms dense beds at the southern end of the Langebaan-Saldanha lagoon, where it is uncovered at low water of spring tides.

There are no marine Gymnosperms, mosses or liverworts. Ferns and allied forms (*Pteridophytes*) are also absent from marine habitats if we except the fern *Aerostichum aureum* which occurs somewhat below to just above high-water level. A number of lichen species occur between tide marks and on some coasts (but not South African shores) they form dense, narrow belts which can be seen from a distance. A number of marine yeasts and fungi are known and marine bacteria are very abundant, occurring in all the various habitats. They are especially abundant on sea-beds including those of sunless depths.

The existence of different kinds of marine plants has been indicated but, in general, algae are the dominant plants of marine habitats. Thus, an important generalization can be made. There are two dominant sets of plants in the contemporary flora; the Angiosperms are dominant on land and a number of algal groups are dominant in the sea. It should be noted that marine algae represent a few major patterns of construction. Thus, while the dominant land plants present variations on one major theme, the dominant marine plants present variations on a few major themes. To appreciate the perspective indicated above, it is important to realize that the great mass of terrestrial plant life is not crowded on to land with, as it were, small groups of peculiar plants growing in the sea and forming an inconsiderable proportion of the whole. Mankind, by and large, is at home on land and for this and other reasons it is perhaps natural to regard the plant life of the sea as being, as it were, an appendage to that of the land. The meagre evidence available indicates that the annual production of plant material per unit area of sea surface is on an average not less than the corresponding value for the land.

As the sea covers about two-thirds of the earth's surface it will be clear that the annual total production of plant matter in the sea far exceeds the annual total production of plant matter on land. The abundance and activity of marine plant life are, however, not obvious especially in comparison with the plant life of land for a number of reasons. In the first place, in the open sea, which forms the greater part of the marine habitats taken collectively, the plants are chiefly of microscopic size and form floating communities in the sunlit layers of water. These plants are referred to collectively as phytoplankton. Secondly, in any given sea area, communities of phytoplankton do not have the duration shown by communities of land plants such as grasslands. They appear or disappear sometimes within a few days, this being made possible by the short lifespan of individuals and the potential rapid rate of reproduction. The last consideration is largely an extension of the second. There would seem to be no really long-lived algae in the sea. Even the large perennial kelps do not attain to the duration of life found among the trees of the land. Thus, on land there is a greater additive effect due to new additions year by year to persisting dead or living plant material.

The floating plant communities of the sea are usually comprised of microscopic creatures. The outstanding exception is the occurrence of floating species of the seaweed *Sargassum* in the Sargasso Sea—an area of about two million square miles mostly in the subtropical and warm-temperate latitudes of the western Atlantic, north of the equator.

The microscopic phytoplankton organisms are of a number of different kinds but they are chiefly diatoms and peridinians. Both diatoms and peridinians are unicellular. The diatoms contain chlorophyll but they are yellow-brown in colour since the chlorophyll is masked by a number of other pigments including fucoxanthin. Like green land plants, diatoms use the energy of sunlight to build up complex organic compounds from the carbon, hydrogen and oxygen of water and carbon dioxide; these compounds being further elaborated by the incorporation of elements (including nitrogen) absorbed from various salts present in sea water.

As these plants are necessarily somewhat unfamiliar, a number of diatom species are illustrated in Plate 4, *a–c*, which also illustrates two peridinians (*d*, *e*). These creatures were collected from the waters of Saldanha Bay. Diatoms have silica shells consisting of two parts which usually overlap like box and lid. The surface of these shells may be delicately and elaborately sculptured rendering them beautiful objects under the microscope. They frequently have spinous outgrowths of the shell (*a*) which by becoming intertwined form chains of diatoms of greater or lesser length (*b*). Chains of diatoms may also be formed by means of connecting strands, pads or cushions of mucilage (*c*).

Not all peridinians contain chlorophyll and elaborate their own food materials. There are all transitions from those which are truly plants in their physiology to those that have a purely animal mode of nutrition. Still the peridinians are an important constituent of the phytoplankton. They are more complex in form than the diatoms and usually have a shell of greater or lesser complexity.

In the sea as on land, animal life is ultimately dependent on plant life since animals depend directly or indirectly on plants for their food. Although they are of microscopic size taken collectively the phytoplankton form the bulk of marine plants.

Between tide levels and in shallow seas the vegetation is usually dominated by seaweeds. These plants are especially luxuriant in colder waters where beyond low-water limits of spring tides the forests of the sea, composed of large kelps, are found. The seaweeds belong to the groups popularly known as green, brown and red algae. The blue-green algae are a fourth group but they are a relatively unimportant constituent of the seaweed population. From a botanist's point of view these are very divergent groups. They differ from one another in their physiology, reproductive organs and to a lesser extent in their life history. Except for the green algae they also diverge in their physiology from the various groups of land plants. The green algae and land plants, on the other hand, have essentially similar physiology and biochemistry and it is as certain as such things can be that land plants (and ultimately Angiosperms) were derived from green seaweeds.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT FOR THE YEAR ENDING 31 DECEMBER 1953

Your Council has pleasure in presenting the Fortieth Annual Report of this Society for the year ending 31 December 1953.

The Council met four times during the year.

Membership.—New Members enrolled during the year totalled 304. Resignations and deaths totalled 89. Members who were two years overdue with their subscriptions numbered 200, and were deleted from the membership roll. The total membership of the Society is now 2,670, including 181 Life Members.

Financial.—A total of £2,973 7*s.* 8*d.* was received during the year in subscriptions, donations and interest on investments. Expenses amounted to £809 9*s.* 2*d.*, leaving a balance of £2,163 18*s.* 6*d.* which forms the Society's grant to the Trustees of Kirstenbosch and the Karoo Garden, Worcester, for the year 1954. The Life Members Fund stands at £2,230 7*s.* 3*d.* of which £300 was received during 1953. The sum of £617 15*s.* 7*d.* was withdrawn from the Dr. Bernard Price Bequest of £820 to cover the costs of the Society's office extension. The balance was replaced on fixed deposit.

Botanical Society Office Extension.—A much-needed extension to the Botanical Society's office was erected during the year. This building, which is primarily a store-room, is a very satisfactory addition, completely in tone with the existing building. The cost of this extension was £617 15*s.* 7*d.* and was met from the Dr. Bernard Price Bequest as detailed under finance.

'Wild Flowers of the Cape of Good Hope.'—Sales of this book continue satisfactorily both here and overseas. The Publications Committee paid £1,300 to the Department of Education in respect of their loan of £2,000, leaving a balance of £700 which it is hoped to repay during 1954. Approximately 4,800 copies of the book have been sold to date. In November a specially bound copy was presented to Her Majesty the Queen. A copy was also presented to the Queen Mother during the Royal Tour of Southern Rhodesia in June.

Retirement of Professor R. H. Compton.—On 31 December 1953 Professor Compton retired from the directorship of the National Botanic Gardens, Kirstenbosch, a post he had held since 1919. The Trustees of Kirstenbosch, together with the Council of the Botanical Society, gave a dinner in his honour on 27 November in the Tea House, Kirstenbosch, at which Mr. W. Duncan Baxter presented Professor Compton with a microscope and Mrs. Compton with a brooch. At a social evening held on 30 November, Major G. Brand van Zyl, a former Governor-General of South Africa, and a Founder Member of the Botanical Society, presented Professor and Mrs. Compton with a radiogram on behalf of the Members of the Society. At a later date, a cheque, also on behalf of the Members, was presented towards an artist's portrait of Professor Compton which now hangs in the Herbarium at Kirstenbosch. Honorary Life Membership of the Botanical Society was also bestowed on him by the Council of the Botanical Society in appreciation of his services over the years.

Journal of the Botanical Society, Part XXXVIII—Edited by Professor Compton—was published during the year, and issued to all Members, Learned Societies, etc.

Meetings held during the year.—

17 *March.* Lecture Hall, Kirstenbosch. Annual General Meeting. Miss P. N. Gray showed cine films of South African wild flowers.

19 *May.* Lecture Hall, Kirstenbosch. Dr. C. A. Luckhoff gave a most interesting talk entitled 'Table Mountain Flora', illustrated with colour slides.

16 *June.* Lecture Hall, Kirstenbosch. 'Nature Conservation in the Cape Province' provided the theme for a talk given by Dr. D. Hey, Director of Nature Conservation.

18 *August.* Lecture Hall, Kirstenbosch. Mr. A. J. M. Middlemost, Assistant Curator of Kirstenbosch, gave a descriptive and illustrating talk on 'Garden Pests'.

6 *September.* A very pleasant day was spent visiting the Wild Flower Nursery of Mr. and Mrs. E. R. Middleman at Bot River.

19 *September.* Anniversary Meeting, Karoo Garden, Worcester. This was held in glorious weather and attended by the Mayor and Mayoress of Cape Town,

and the Mayor and Mayoress and Councillors of Worcester. Afternoon tea was kindly provided by Mrs. Thudichum and ladies.

3 *October.* Annual Gathering of Members on the New Lawn, Kirstenbosch. Many Members attended this function in order to show their appreciation to Professor Compton who was attending this gathering for the last time as Director of Kirstenbosch. In his address, Mr. W. Duncan Baxter paid high tribute to Professor Compton under whose directorship the Gardens had made steady progress.

31 *October.* Mr. J. S. Lindley conducted an enthusiastic party of Members around the Cape of Good Hope Nature Reserve during the afternoon, and after a picnic tea arranged a very instructive display of botanical specimens.

7 *November.* The lovely Constantia garden of Mr. and Mrs. L. Spilhaus provided the setting for a most enjoyable afternoon. Tea and cakes were kindly provided by our host and hostess.

Judging by the many expressions of appreciation received from Members, all of the above meetings were enjoyable and well attended. The Council of the Botanical Society herewith extends its cordial thanks to all who helped to make these functions so successful.

SEED DISTRIBUTION.—The number of packets of seeds distributed to Members of the Botanical Society during the year was 12,548.

ELECTION OF OFFICE BEARERS.—At the Annual General Meeting of the Society held on 17 March the following were elected:

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, The Rt. Hon. E. F. Watermeyer, P.C.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council:

Professor R. S. Adamson
Dr. A. J. Ballantine
Mrs. F. Bolus
Mr. C. H. Clayton
Mr. M. Clough
Mr. D. R. D'Ewes
Dr. E. L. Gill
Mr. C. R. Gohl
Professor W. E. Isaac
Miss M. E. Johns
Mrs. M. R. Levyns
Dr. G. J. Lewis
Mr. J. S. Linley
Miss K. Murray
Mr. H. Porter
Dr. H. B. Rycroft
Mr. L. A. Solomon
Miss E. L. Stephens
Mr. W. C. West
Mr. G. E. Williamson

Mr. C. J. Sibbett was re-elected chairman at the first meeting of the Council.

OBITUARY.—Your Council sincerely regrets to record the deaths of 16 Members of the Society during the year.

THANKS.—Sincere thanks are here recorded to the Cape Provincial Administration for the use of their rooms for meetings of the Council during the year. Thanks are also cordially extended to the daily press for their kind co-operation in reporting the proceedings of the Society at its meetings and elsewhere.

C. J. SIBBETT,
Chairman.

(Mrs.) W. N. HALL,
Hon. Secretary/Treasurer.

Wild Flowers Protection Section Committee

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1953

The Committee held three meetings during the year.

Membership.—A total of 60 New Members were enrolled to the Section during the year.

Financial.—Subscriptions received amounted to £202 19*s*. 0*d*. The Cape Provincial annual grant-in-aid of £150 was received. A further sum of £150 was placed on fixed deposit, bringing the amount now held on fixed deposits to £583 5*s*. 5*d*. Expenditure of the section for the year was £306 9*s*. 5*d*. as detailed on the balance sheet.

Inspection of Wild Flower Nurseries.—Messrs J. S. Linley and H. D. W. Meyer have carried out routine inspections on registered wild flower nurseries and their 'sites' during the year. In most cases they were able to furnish a very satisfactory report on their inspections. These nurserymen are doing a great deal to prove that our wild flowers can be cultivated to form ideal garden plants.

Contraventions of the Wild Flowers Protection Ordinance.—Mr. Meyer, our appointed officer, has been instrumental in bringing 212 offenders against the Ordinance before the courts during 1953. Of these, 154 have been convicted. A total of £296 10*s*. 0*d*. was paid into the courts in fines during the year.

Plain Language Digest of the Wild Flowers Protection Ordinance.—At the request of the Department of Nature Conservation, Mr. J. S. Linley composed a 'Plain Language Digest' of the W.F.P. Ordinance for issue to all Honorary Nature Conservation Officers and others. The Committee wishes to place on record its very sincere appreciation to Messrs. Meyer and Linley for their diligent services towards the cause of wild flower protection. Cordial thanks are also expressed to Mr. V. Karg, appointed officer of the Cape Provincial Administration who has accompanied Messrs. Meyer and Linley on visits of inspection to nurseries and 'sites'.

Testudinaria elephantipes.—During the year the Wild Flowers Protection Committee has actively investigated the exploitation of this plant in the Cape Province for the extraction of the drug Diosgenin. The Committee submitted its recommendations to the Cape Provincial Administration in respect of the permits granted for the collection of these plants. From subsequent reports received it would appear that in the very near future the medicinal products of Testudinaria would be synthesized, thus making the collection of these plants both unnecessary and uneconomical, and it was likely that the scheme would be abandoned.

Nature Advisory Committee.—Professor Compton attended this meeting which was held in Grahamstown in April, at which was tabled the Wild Flowers Protection Committee's recommendations in respect of amendments to the Wild Flowers Protection Ordinance. These recommendations were accepted in principle for inclusion when the Ordinance was amended.

Members of the Committee, 1953.—The following were re-elected by the Council of the Botanical Society:

Professor R. H. Compton
Mr. C. J. Sibbett
Mrs. F. Bolus
Mr. C. H. Clayton
Mr. C. R. Gohl
Miss K. Murray
Mr. H. N. Porter
Mr. W. C. West
Mr. C. St. L. Searle
Dr. H. B. Rycroft
Mr. J. S. Linley
Dr. E. L. Gill
Miss M. E. Johns

Professor Compton was re-elected chairman at the first meeting of the Committee.

R. H. Compton,
Chairman.

(Mrs.) W. N. Hall,
Hon. Secretary/Treasurer.

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31 DECEMBER 1953

	£	s.	d.	£	s.	d.
Life Membership Fund:						
Balance as at 1/1/53	1,930	7	3			
Add amount received during 1953	300	0	0			
				2,230	7	3
Subscriptions paid in Advance				147	2	2
Dr. Bernard Price Bequest Fund				820	0	0
National Botanical Gardens:						
Surplus for year				2,163	18	6
				£5,361	7	11
Wild Flower Protection Section:						
Balance as at 1/1/53	792	11	10			
Grant from Provincial Admin.	150	0	0			
Subscriptions received during 1953:						
Ordinary £197 19 0						
Life 5 0 0						
	202	19	0			
Interest received during 1953	21	13	6			
	1,167	4	4			
Less 5% of 1953 Subscriptions credited to General Administration:						
Expenses £10 6 0						
Salaries 240 0 0						
Nursery Inspection 15 5 10						
Stationery, Postages, Travelling Expenses, Bank Charges, etc. 40 17 7						
	306	9	5			
				860	14	11
				£6,222	2	10

	£	s.	d.	£	s.	d.
Cape of Good Hope Savings Bank:						
Deposit with interest at 4% p.a. to 31/12/53				819	19	0
Post Office Savings Bank:						
Deposit with interest at 3% p.a. to 31/12/53				86	1	11
United Building Society:						
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/53	580	5	9			
Savings Bank Account with interest at 3% p.a. to 31/12/53	549	10	5			
				1,129	16	2
South African Permanent Mutual Building Society:						
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/53	472	9	8			
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/53	870	5	5			
				1,342	15	1
Cash at Standard Bank of S.A. Ltd.						
Current Account £1,346 10 8						
In Hand 4 4 9						
	1,350	15	5			
Less Liabilities as at 31/12/53	330	13	11			
				1,020	1	6
Miscellaneous Assets:						
Amount due from Wild Flower Protection Section	10	6	0			
Sundry Debtors re Journal Advertisements	42	1	0			
				52	7	0
Dr. Bernard Price Bequest—Investment Fund:						
Fixed Deposit for 12 months with the United Building Society with interest at 4% p.a. to 31/12/53	292	11	8			
Office Extensions	617	15	7			
				910	7	3
				£5,361	7	11
Wild Flower Protection Section:						
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society with interest at 4% p.a. to 31/12/53	293	17	3			
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society with interest at 4% p.a. to 31/12/53	134	3	8			
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society with interest at 4% p.a. to 31/12/53	155	4	6			
Cash at Standard Bank of S.A. Ltd.—Current Account	287	15	6			
	871	0	11			
Less Amount due to General Account	10	6	0			
				860	14	11
				£6,222	2	10

We have to report that we have examined the above Balance Sheet with the books and vouchers of the Society and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper books and accounts. We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and fair view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shown by the books of the Society.

R. M. JOUBERT & CO.,
Chartered Accountants (S.A.).

27 January 1954, Cape Town

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31 December 1953.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To General Administration Expenses		116 8 11	By Subscriptions:		
,, Audit Fees 1952 and 1953 ..		31 10 0	Family Members	450 17 7	
,, Honorarium to Secretary-Treasurer		300 0 0	Ordinary Members	2,071 13 4	
,, Bank Charges		10 9 10	Associate Members	295 1 0	
,, Stationery, Printing, Duplicating, etc.		137 17 0			2,817 11 11
			,, Donations		36 2 2
,, Journal No. XXXVIII:			,, Interest on Investments		119 13 7
Cost to date including Printing, Dispatching, etc.	338 4 5				
Less amounts received and due from advertisements	125 1 0				
		213 3 5			
,, Surplus for year		2,163 18 6			
		£2,973 7 8			£2,973 7 8

PUBLICATIONS ON SALE AT KIRSTENBOSCH

The following may be obtained by application, enclosing payment, to The Hon. Secretary, Botanical Society, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

'Economic Plants at Kirstenbosch'; F. W. Thorns. (Lavender, Mint, Sumach, Pyrethrum, etc. 1 plate.)	6*d.*
'South African Trees and Shrubs at Kirstenbosch'; F. W. Thorns	6*d.*
'The Genus Oxalis in South Africa'; T. M. Salter. (355 pages, 10 plates, 73 text-figures.)	35*s.*
'The Species of Oxalis occurring in the Cape Peninsula and how to distinguish them'; T. M. Salter	6*d.*
'General Hints on Raising Indigenous Plants from Seed'; H. F. Werner	6*d.*
'The Wilds, Johannesburg'; Miss G. Edwards	6*d.*
'A Tip for Horticultural Societies'; Dr. N. R. Smuts	6*d.*
'The Cultivation of Buchu'; H. F. Werner	6*d.*
'The National Botanic Gardens of South Africa, Its Aims, Functions and Policy'; R. H. Compton	6*d.*
'Plant Collecting in the Kaokoveld'; H. Hall	6*d.*
'Three Hundred Years of Trees'; R. H. Compton	6*d.*
'South African Proteaceae and their Cultivation'; H. F. Werner	6*d.*
'Progress in the Study of the Silver Tree Disease'; D. Olivier	6*d.*
'Pelargonium—A South African Contribution to World Gardens'; F. M. Leighton ..	6*d.*
'The Propagation of Succulents from Seeds and Cuttings'; H. Hall	6*d.*
Annual Reports of the National Botanic Gardens, 1913-53, each year	3*d.*
Reprints available of articles published in the 'Journal of South African Botany', on inquiry, each	6*d.*

'The Journal of South African Botany'; Vols. I-XX, 1935-54, each volume in four quarterly parts; per volume 30*s.*, per part 10*s.* 6*d.* (To members of the Botanical Society 25*s.* and 8*s.* 6*d.* respectively.) Back volumes at price of publication.

JOURNAL OF THE BOTANICAL SOCIETY: BACK NUMBERS

The following Parts are obtainable at the prices shown. The principal contents are mentioned below: each part also contains full-size Plates, News and Notes, Reports, etc.

Price to Members of the Botanical Society 1/6; to non-Members 2/6

Part	VIII.	South African Geraniaceae.	L. Bolus.
		The Cultivation of Geraniaceae.	J. W. Mathews.
		Medicinal and Aromatic Plants in S. Africa.	R. H. Compton.
		South African Heaths.	L. Bolus.
		The Cultivation of Heaths.	J. W. Mathews.
,,	XIII.	Notes on Mesembryanthemum and Allied Genera.	L. Bolus.
		South African Succulents.	J. W. Mathews.
		Alien Trees at Kirstenbosch.	R. S. Adamson.
,,	XXI.	Aloe Marlothii: Some Forms and Hybrids.	G. W. Reynolds.
		Lawn Grasses on Trial at Kirstenbosch.	J. W. Mathews.
		How to form a Garden Library.	L. B. Creasey.
		South African Conifers for Garden Use.	J. W. Mathews.
		From New York to Kirstenbosch and Back.	S. V. Coombs.
,,	XXII.	South African Succulents at Kew.	Sir Arthur Hill.
		An Old Cape Frontier.	E. A. Walker.
		Our Wild Flowers and Their Protection.	F. Guthrie.
,,	XXIII.	Economic Plants at Kirstenbosch.	F. W. Thorns.
		Garden Gladioli—Their Origin and History.	L. B. Creasey.
		Growing Plants from Seeds.	S. G. Fiedler.
		Letters from an Early Cape Botanist.	M. C. Karsten.
,,	XXIV.	(Silver Jubilee Number.)	
		Kirstenbosch. (Broadcast 9 September 1938.)	R. H. Compton.
		Nature Study at Kirstenbosch.	M. E. Johns.
,,	XXV.	Buildings at Kirstenbosch.	J. W. Steytler.
		Parks and Publicity.	F. R. Long.
,,	XXVI.	The South African Genera of the Haemodoraceae.	W. F. Barker.
		Humus and Soil Fertility.	F. W. Thorns.
		Mountains and Their Vegetation.	R. H. Compton.
,,	XXVII.	Weeds: The 'New' Cape Flora.	R. S. Adamson.
		Drug Plants.	F. W. Thorns.
,,	XXVIII.	The Herbarium of the National Botanic Gardens, Kirstenbosch.	R. H. Compton.
		Nature Study in the Forests at Kirstenbosch.	M. E. Johns.
,,	XXX.	Cultivation of Bulbs from the Winter Rainfall Area of the Cape.	F. W. Thorns.
		Report on the Silver Leaf Tree Borer.	F. G. C. Tooke.
		The Magic of the Cycad Forest.	F. Milner.
		Report of the Sub-Committee on Veld Conservation, August, 1944.	
,,	XXXI.	Cape Annuals for the Garden.	F. W. Thorns.
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,,	XXXIII.	Indigenous Plants.	F. W. Thorns.
		The Species of Oxalis occurring in the Cape Peninsula.	T. M. Salter.
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		Some Impressions and Comparisons.	H. Hall
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		A Visit to the Herbarium, Kirstenbosch.	W. F. Barker.
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		South African Proteaceae and their Cultivation.	H. F. Werner.
		Progress in the Study of the Silver Tree Disease.	D. Olivier.
,,	XXXVIII.	Pelargonium—A South African Contribution to World Gardens.	F. M. Leighton.
		The Karoo Garden, Worcester	J. Thudichum.
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(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organize shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members of botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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Edited by H. B. RYCROFT, M.Sc.,
B.Sc.(For.), Ph.D., Director of the National
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Part XL 1954

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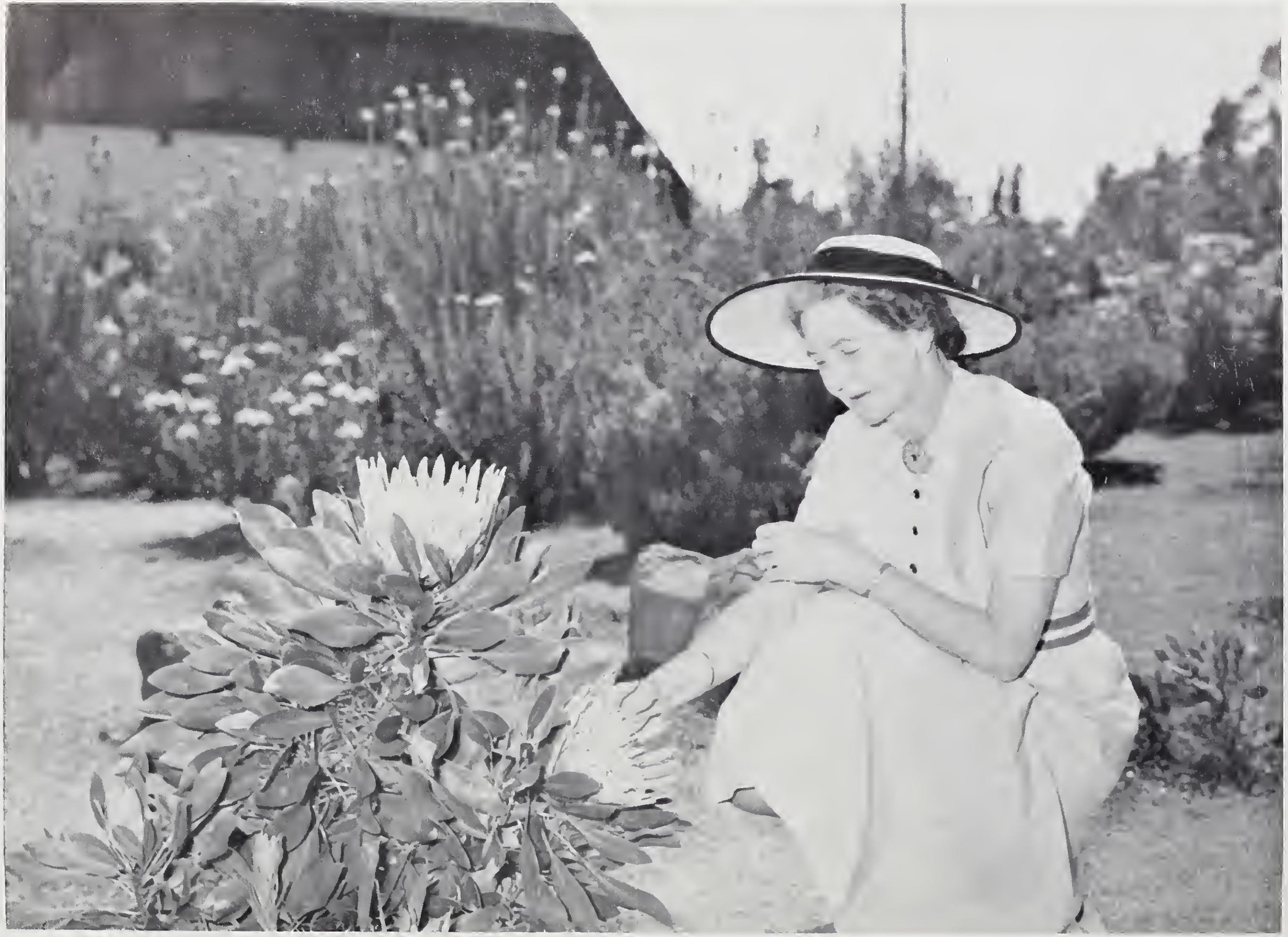

[Photo: W. O. Kühne.

PLATE I

Mrs. Vogts in her three-year-old garden. *Protea cynaroides* in the foreground and *Leucospermum reflexum* and *L. tottum* in the background.

The Journal of the Botanical Society of South Africa

EDITED BY H. B. RYCROFT

PART XL 1954

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PLATES

PLATE 1. Frontispiece. Mrs. M. M. Vogts in her three-year-old garden. *Protea cynaroides* in the foreground and *Leucospermum reflexum* and *L. tottum* in the background (Photo: W. O. Kühne).

PLATE 2. Sea Lettuce—*Ulva lactuca; Cladophora capensis; Dictyota dichtoma* var. *intricata; Bifurcaria brassicaeformis; Gelidium pristoides; Plocamium corallorhiza.*

PLATE 3A. Rock-pool on Pondoland coast (Intafufu) showing abundant growth of prostrate Corallinaceae.

PLATE 3B. Cape laver, *Porphyra capensis*, at high-water level of neap tides, Melkbosch.

PLATE 4. In the background a grouping of *Leucospermum reflexum, L. nutans* and *L. attenuatum* forming one compact shrub (Photo: W. O. Kühne).

News and Notes

WILD FLOWER SHOW

Please make a special note of Saturday, 8 October, on which two important functions take place at Kirstenbosch, viz. the Annual Gathering of Members on the New Lawn at 11 a.m. and the Wild Flower Show in the Lecture Hall at 12 noon. One of the primary objects of the Society and the Gardens is to encourage the preservation of our South African flora by means of cultivation. With this in mind it has been decided to hold a Wild Flower Show this year, when we are to be honoured by the Provincial Secretary, Mr. W. J. B. Slater, who has kindly consented to perform the opening ceremony. Only Members of the Society will be eligible to submit entries for this Show, all of which must be cultivated by themselves. Further particulars are detailed on the Schedule and entry form contained in this Journal. This Wild Flower Show is the first of its kind to be sponsored by the Council of the Botanical Society and is in the nature of an experiment. Its success will depend upon the support which you give to it and it is to be hoped that as many members as possible will submit entries.

* * *

AN APPRECIATION OF THE FOUNDER OF THE NATIONAL BOTANIC GARDENS

This Journal has brought back memories of the Founder and first Director of Kirstenbosch to Miss Killie Campbell of Durban, who has written as follows to the Editor: 'The last number, Part XXXIX, of the *Botanical Journal* has indeed given me nostalgia for Kirstenbosch Gardens. Happy memories of the past recall tramps with Professor Pearson through the narrow rambling paths of Kirstenbosch, revelling in the beauty of the mountains and the joy of learning about the wild flora of the Cape.

'My father was a friend of Professor Pearson, as well as being a foundation member of the Botanical Society and was keenly interested in the scheme of saving such a wealth of natural beauty for future generations.

'It was a great disappointment to me that circumstances prevented me from joining Swanley Horticultural College as a student and specializing in landscape gardening, but instead Professor Pearson opened up a wonderful new world for me in his enthusiasm and the creation of a wild flower garden at Kirstenbosch.

'Although he and my father died in the same year, 1917, and just after I met him, those rambles remain always an inspiration and a vivid memory to me.

'It greatly encouraged me to collect our indigenous flora here in Natal. One year, I particularly remember my garden was a vivid splash of colour with Namaqualand Daisies, Sparaxis, and Cape annuals, grown from seed from Cape friends and Kirstenbosch. I am afraid though in my latter years my Africana Collection has absorbed most of my attention. Now I go sadly round my garden, for it has never recovered from being turned into a vegetable garden during the war years and I lost most of my treasures.

'The Durban branch of the National Society has been making efforts to create another Kirstenbosch here, for our flora is so different from other provinces in South Africa. Our members have written seriously about the wanton destruction of our indigenous plants and trees, and we are hoping something will be done to preserve them in a scheme which has been put before the City Councillors.

'In parts of my garden are scattered remains of indigenous trees and plants and whenever they flower my thoughts go out in appreciative gratitude to Professor Pearson and to Kirstenbosch, for it was through his influence and enthusiasm that the love of wild flowers has played such a real part and interest in my life.'

* * *

ANNUAL REPORT OF THE NATIONAL BOTANIC GARDENS

In the past every Member of the Botanical Society was sent a copy of the Annual Report of the Gardens, but this year the cost of printing a similar number as previously would have been considerably increased because the Report has been published both in English and Afrikaans. To save expense fewer have been printed and it has been decided not to send copies to Members. Some of the items likely to be of interest to Members are mentioned in these columns. A limited number of copies is, however, available and will be sent to Members upon application and the receipt of 3*d.* in stamps. Please state whether it is required in English or Afrikaans.

* * *

KAROO GARDEN, WORCESTER

Those who cannot see the display of wild flowers in Namaqualand in the spring but who can reach Worcester would be well advised to visit the Karoo Garden which is a branch of the National Botanic Gardens at Kirstenbosch. This Garden, the first child of Kirstenbosch, is devoted to the cultivation of plants from the more arid parts of the country. With limited funds and with very few labourers—sometimes only two—very satisfactory progress has been maintained and for this full credit is accorded to the Curator, Mr. J. Thudichum.

The Garden is still in the developmental stage because it is only a few years ago that it was transferred from Whitehill, near Matjesfontein. Each year since, the Garden has grown and it has now reached the stage that it is attracting more and more scientists and other visitors. The Karoo Garden has a great future and is likely to become world famous.

Until recently the total area of the Garden was 37 morgen. During September 1954 an application was made to the Municipality of Worcester for the inclusion in the Karoo Garden of the valley and range of hills to the east of the Garden. The Town Council unanimously agreed to cede this land, which comprises approximately 60 morgen, to the National Botanic Gardens.

A little later Mr. Charles H. Heatlie, granted an additional 35 morgen of his farm which includes a beautiful koppie to the north of the Garden. It is fitting that sincere appreciation be placed on record of the magnanimous gestures of Mr. Heatlie and the Municipality of Worcester. Practically the whole of the skyline to the west, north and east of the original Garden will now be included in the new Garden.

The completion of a perfect setting has now been achieved and what is more important is that the future expansion of Worcester will not be able to affect the Garden in any way. The land cannot be developed immediately, but it is very satisfactory to realize that there is ample room for development in the years to come.

* * *

REGIONAL BOTANIC GARDENS

One of the main objects of the National Botanic Gardens at Kirstenbosch since its establishment forty-two years ago has been the preservation of the South African flora by the cultivation of our wild flowers. The setting aside of Nature Reserves can do much to protect our flora and the establishment of more and more Reserves should be vigorously encouraged. It should be remembered, however, that although some species have a wide distribution and occur in various parts of the country it is characteristic of many South African species that they occur only in certain restricted localities. If these localities lie outside the reserves the plants are afforded little or no protection and unless brought into cultivation are likely to be exterminated in time.

At Kirstenbosch every effort is being made to save our wild flowers by propagating them and considerable success has been achieved, but even constant care and horticultural skill are not sufficient to ensure the survival of all species in the Gardens. Heavy winter rains and long summer droughts create conditions unsuitable for some plants. It was for this very reason that the Karoo Garden was established. There the rainfall rarely exceeds 10 inches per annum and conditions are favourable for the cultivation in the open of succulents and other plants characteristic of the drier parts of the country.

There are still other species which demand conditions which neither Kirstenbosch nor Worcester can provide and for them further branches of the National Botanic Gardens should be established as Regional Botanic Gardens in different parts of the country, each in a different botanical region. Each Garden would cater for the species of its particular phyto-geographical area. The Malmesbury-Darling area, for example, is a locality which should be considered. In the past there were fields of wild flowers as far as the eye could see but to-day one travels for miles and miles through grainlands without seeing a single wild flower. Fortunately there are a few farmers who set aside portions of their lands for the protection of the natural flora, and they are to be congratulated for their far-sighted policy.

In most cases, however, there is no guarantee that the wild flowers will be protected for future generations. If the National Botanic Gardens had some land in this area with its particular type of soil and climate not only would the plants be assured of a permanent home but species liable to be exterminated from adjoining localities would be introduced and saved.

Similarly, Regional Botanic Gardens should be established in the mountains for those species which grow only at high altitudes, at the coast for littoral vegetation, and so on. Will this dream come true?

* * *

PRESIDENT BECOMES AUTHOR

Congratulations to the President of our Society, Mr. W. Duncan Baxter on the publication of his first book, *Turn Back the Pages*. Those of us who have the privilege of knowing Mr. Baxter know him as a grand old gentleman well in the eighties, cultured, public spirited and with a very keen sense of humour. In his book he tells us about his sixty-eight years at the Cape and his activities as a member of Parliament and Mayor of Cape Town. Mr. Baxter has been a Trustee of the National Botanic Gardens and a Council Member of the Botanical Society since their establishment in 1913 and a whole chapter is devoted to his association with Kirstenbosch.

* * *

'Journal of South African Botany'

Some years ago 'The Genus Oxalis in South Africa' by Paymaster Captain T. M. Salter was published as Supplementary Volume No. 1 of the *Journal of South African Botany* and now Supplementary Volume No. 2 has been published. It is 'The Genus Muraltia' by Dr. Margaret R. Levyns. This book which describes and illustrates every known species of Muraltia should appeal to every serious student of South African botany. It is being sold at £1 15*s.* 0*d.* per copy and subscribers to the Journal are privileged to obtain it at the reduced price of £1 11*s.* 6*d.* South African currency.

* * *

'Flowering Plants of Africa'

This well-known botanical work, *Flowering Plants of Africa,* is described in this Journal by Dr. R. A. Dyer, Chief of the Division of Botany. You will find an order form and a specimen plate in this Journal. Eight different plates have been used but only one appears in each Journal. They may be identified as follows:

1051	Plectranthus ciliatus.
1058	Hypoxis nitida.
1059a	Crassula compacta.
1059b	Crassula socialis.
1060	Cataphractes alexandri
1061	Erica sitiens
1064	Lampranthus haworthii
1066	Eulophia dissimilis.
1070	Cadia purpurea.

* * *

New Book on Succulents

Mr. H. Hall, Senior Horticulturist in charge of succulent plants at Kirstenbosch, has just written a small handbook entitled *Common Succulents* to be published in May 1955, by Longmans Green & Co., price 6*s.* This work will contain introductory notes about South African succulents and a chapter on cultivation. It will be illustrated with four colour plates painted by Mrs. E. Garrett Rice, the artist of the Botanical Society's book *Wild Flowers of the Cape of Good Hope.*

* * *

'Flowers of South Africa for the Garden'

Readers of Sima Eliovson's excellent book *Flowering Shrubs and Trees for South African Gardens* will be glad to learn that she has just written another book entitled *Flowers of South Africa for the Garden,* which is to be published towards the end of the year by Howard B. Timmins. Full details of this book are contained in the illustrated brochure and order form enclosed in this Journal.

* * *

Book on Trees and Shrubs

In the last issue of this Journal mention was made of the publication of *Gardening in Southern Africa* by Una van der Spuy, and it is now a pleasure to announce the publication of her second book entitled *Ornamental Shrubs and Trees for Gardens in Southern Africa.* In it Mrs. van der Spuy deals with more than 400 species of trees, shrubs and climbers and the book is illustrated with beautiful colour and half-tone plates and 180 line drawings. The planning of the garden and the choice of species are made easy because the form, size, flowers, use and culture of each species are described. Plants indigenous to South Africa have been generously dealt with. This book should be on the shelves of every keen gardener. Price 21*s.*, obtainable from the publishers, Juta & Co., Ltd., and all booksellers.

* * *

Re-discovery of Proteas

Mention is made elsewhere of the necessity of cultivating our wild flowers to save them from extermination. Many species have been almost completely exterminated from certain areas and doubts exist about the survival of others. The re-discovery of species thought to have been lost is therefore very happy news. Until recently the last-known record of an Aulax (which belongs to the Protea family) being found on the Cape Peninsula was in 1899, and now, in 1955, a few plants have again been discovered on the Peninsula. Since the beginning of 1954 repeated attempts have been made by several people to find *Protea odorata,* a very rare species last collected many years ago. When hope was almost given up of ever seeing this species again a few plants were found. This dainty little Protea which looks rather like the 'Blushing Bride', *Serruria florida,* was receiving no protection and in fact is likely to be killed out by the spread of the Australian wattles which are invading the area. A fair amount of seed has been collected and Kirstenbosch is offering this species a new home where it will be cared for.

* * *

SEED DISTRIBUTION

During the last ten years the distribution of seed from Kirstenbosch has increased more than tenfold. In 1954 the record number of 1,045 members participated in the free distribution of seed from the Gardens at Kirstenbosch and Worcester, nearly 14,000 packets being sent out. More than 3,500 packets were distributed to Botanic Gardens and other scientific institutions in all parts of the world, and the sale of seed to the horticultural trade totalled £683.

* * *

STILL FINDS KIRSTENBOSCH INTERESTING

During the year a Member called at the Society's office and in the course of conversation remarked that he estimated that he had visited Kirstenbosch 1,030 times. He said that after all of these visits he still finds the Gardens full of interest and beauty. Can any member beat this record?

* * *

SECRETARY'S OVERSEAS LEAVE

The Secretary of the Society, Mrs. W. N. Hall, sails for England on 17 June on a visit to her mother at 77, Kew Green, Kew. She is taking a number of 35 mm. coloured slides of some of South Africa's wonderful flora and surroundings with her which she has been invited to show to interested groups. In response to her invitation to overseas members to call on her at Kew, she has received many kind letters and looks forward to the pleasure of meeting them. Mrs. Hall returns to Kirstenbosch about 26 August.

* * *

SUBSCRIPTIONS DUE

The general reminder of subscriptions due was sent to all members early in the year together with seed list, membership card, etc. Despite the special appeal of the Secretary in her accompanying letter to all members to send in their subscriptions as soon as possible, particularly this year, time being limited on account of her leave, many members have not responded. If you have not yet sent your dues it really would be very sincerely appreciated if you would kindly do so as soon as possible please.

* * *

OBITUARY

We regret to record the death of Mrs. A. Stow in Bulawayo, on 21 September 1954. Mrs. Stow was Lady Warden of the Harold Pearson Memorial Hostel from 1924 until she retired at the end of 1936 when a change in management took place and the post of Lady Warden was abolished. The way in which she so ably managed, particularly in the early days before the advent of electricity, refrigerators, water-borne sewerage, bus services, etc., carries the admiration and respect of the many residents and visitors who stayed at the Hostel during her regime.

Mrs. I. L. Penfold, lessee of the Tea House at Kirstenbosch for nine years from 1942 to 1950, died on 20 July 1954. She will always be remembered for her beautiful flower arrangements.

The passing of Mr. A. B. McDonald on 1 March 1955 was a very great loss to Kirstenbosch. He was a Life Member of the Botanical Society and for many years was a Trustee of the Gardens. As a business man, director of companies, and educationist his knowledge and experience were of great value to Kirstenbosch.

Dr. P. le F. Nortier, known throughout the country for his interest in the cultivation and improvement of subtropical fruits, rooibos tea and citrus, died at his home in the Clanwilliam district on 9 April 1955. He was a Rhodes Scholar and the recipient of two honorary Doctors degrees.

* * *

The Editor wishes to express his sincere thanks to the Secretary of the Society, Mrs. W. N. Hall, for the assistance he has received from her in preparing this Journal for publication and seeing it through the press.

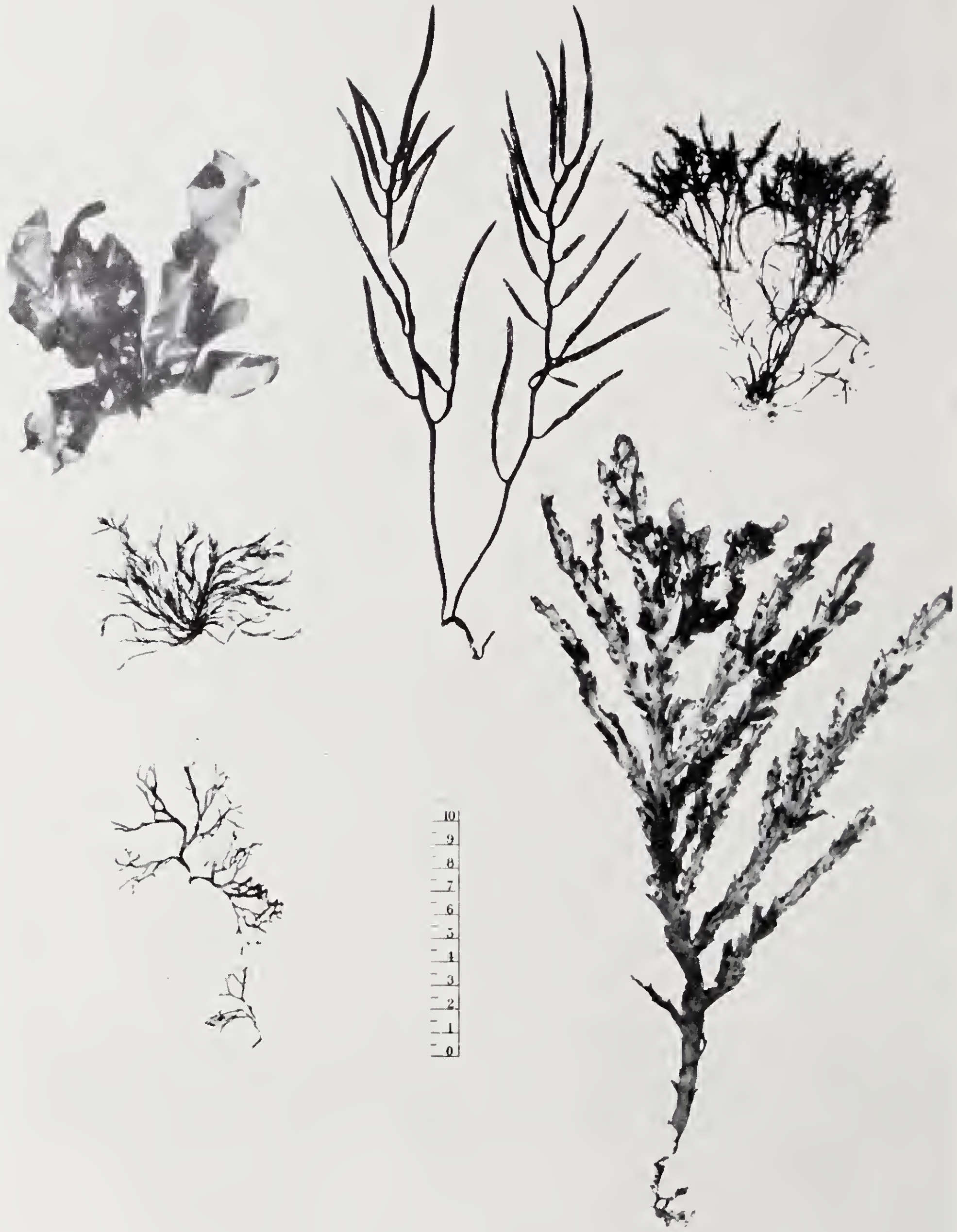


PLATE 2

Sea Lettuce—*Ulva lactuca* (upper left). *Cladophora capensis* (centre left). *Dictyota dichotoma* var. *intricata* (lower left). *Bifurcaria brassicaeformis* (centre). *Gelidium pristoides* (upper right). *Plocamium corallorhiza* (lower right).

Seaweeds

By Wm. EDWYN ISAAC

THE plants popularly known as seaweeds are found growing between tide-levels and in shallow seas. They are algae of various forms, sizes and colours. Seaweeds belong chiefly to three groups of algae—green algae or Chlorophyceae, brown algae or Phaeophyceae and red algae or Rhodophyceae. There are also a number of blue-green seaweeds which belong to the Cyanophyceae.

The popular names imply that these different groups of algae can be distinguished by their colour. This is generally true, but it should be realized that these different groups of algae are distinguished from one another by much more than colour. Colour difference, however, runs parallel with important differences in structure and life-history. Further, colour difference in itself is not an infallible guide as to which group a particular species of seaweed belongs. Thus some blue-green algae or Cyanophyceae are red in colour (*Trichodesmium erythreum*), and not all red algae or Rhodophyceae are red. One of the commonest South African 'red' seaweeds, *Hypnea spicifera*, is usually bright green in colour.

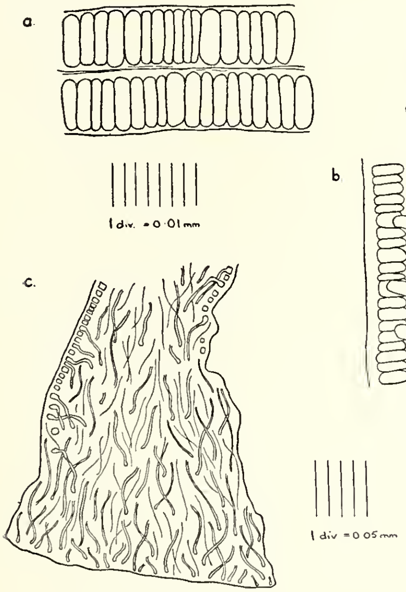


FIG. 1

Diagrams illustrating the structure of *Ulva*:
(*a*) Transverse section showing the two parallel rows of cells.
(*b*) Longitudinal section of lower part of plant showing outgrowths from cells.
(*c*) Longitudinal section of holdfast region.

In the following paragraphs some account will be given of green, brown and red seaweeds chiefly with reference to plants which occur on the coasts of the south-western Cape.

GREEN SEAWEEDS (CHLOROPHYCEAE)

Green algae (Chlorophyceae) are by no means confined to marine habitats. In fact the majority of them are found in fresh waters. The green colour is due to the presence of chlorophyll pigments which are of the same kind and occur in more or less the same proportions as in green land plants. The cell walls consist largely of cellulose and starch is formed as a result of photosynthesis. In these respects also they are similar to green land plants.

In structure and life-history, which show a fair range of variation within the group, they diverge in a number of respects from mosses, liverworts, ferns, Gymnosperms and Angiosperms.

Perhaps the best known of the green seaweeds is the sea lettuce or *Ulva*. There are several species of *Ulva*, but the genus is so widely distributed over the coastlines of the world as to be referred to as a cosmopolitan genus. There are a number of South African forms but these need critical taxonomic study. The general character of all the species is essentially the same, the differences being differences of detail.

The plant is a thin foliose expanse of tissue which is attached to rock, shell or other seaweed by a small disc (plate 2). If cross-sections of the plant are examined under a microscope the plant-body is seen to be built up of two parallel layers of cells (fig. 1*a*). These cells are all alike except near the attaching disc. In the lower part of the plant filamentous outgrowths of the cells occur (fig. 1*b*). These outgrowths grow downwards between the two rows of cells and the attaching disc consists entirely of these outgrowths (fig. 1*c*).

Reproduction occurs in two ways. The cells of the plant form a number of pear-shaped bodies or zoospores with four anterior protoplasmic extensions or flagellae.

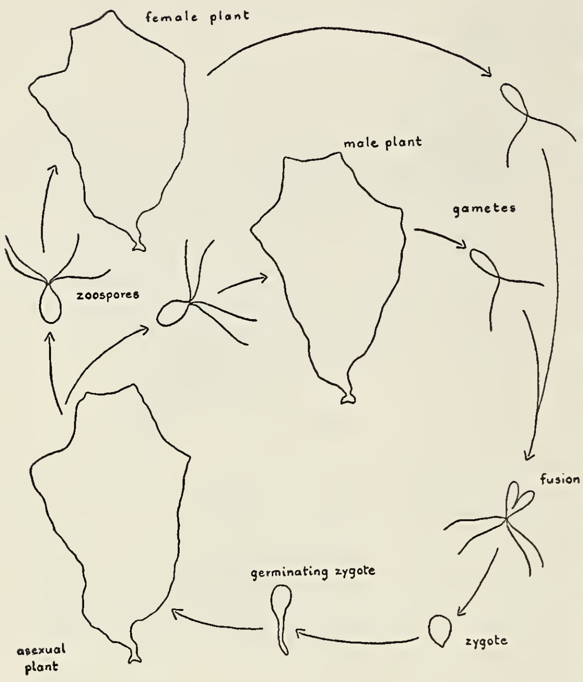


FIG. 2

Diagram illustrating the life history of *Ulva*. (A zygote is the body resulting from the fusion of male and female gametes.)

These zoospores germinate to give rise to new *Ulva* plants. The cells of the plants thus formed produce motile bodies similar to zoospores but smaller and with only two flagellae. These smaller bodies fuse in pairs and are thus gametes or sexual reproductive bodies. The gametes of a fusing pair are derived from different *Ulva* plants. The asexual and sexual reproductive bodies are produced on different plants which alternate with one another. In general appearance the sexual and asexual generations are similar, but the asexual or zoospore-producing plants have twice as many chromosomes in their nuclei as the sexual or gamete-producing plants (fig. 2). In the majority of Chlorophyceae there is only one kind of plant, an alternation of generations being absent.

Another common and cosmopolitan genus of green seaweeds is *Enteromorpha*. This often flourishes in water of high or of very low salinity. Thus it occurs in high-level rock-pools and also spreads inland in rivers, as for example in the Zwartkops river near Port Elizabeth where it may be found growing along with such fresh-water plants as *Potamogeton pectinatus* and duckweed (Lemna). It also flourishes in foul water. The best example of this known to me is its luxuriant state on Dassen Island in rock-pools fouled by the numerous jackass penguins (*Spheniscus demersus*) found on that island. The plants of *Enteromorpha* form hollow tubes, branched or unbranched depending on the species, and one cell thick. In the juvenile phase the plant-body is two cells thick as in *Ulva*, but as the plant develops the two layers of cells pull apart, leaving a central cavity. The life-history and reproduction are the same as in *Ulva*.

Other green seaweeds form unbranched (e.g. *Chaetomorpha*) or branched (e.g. *Cladophora*, plate 2) filaments, the filament and its branches—where present—being built up of a single row of cells, one above the other.

Among the most interesting of the green seaweeds are those belonging to the Siphonales. The great majority of plants of more than microscopic size are built up of units called cells and in flowering plants also of structures derived from cells. These cells may become modified in various ways to carry out particular functions, and some lose their protoplasm and so become dead. In some plants the cells are all alike or nearly alike as in *Ulva* and *Enteromorpha*. Living plant-cells usually contain one nucleus although the cells of a number of both green and red seaweeds contain more than one nucleus. From a constructional point of view the outstanding interest of the Siphonales is that continuous partitions are very few or absent. These plants are thus non-cellular or coenocytic.

Plants showing this type of construction at its simplest consist essentially of a branched coenocytic filament (e.g. *Bryopsis*). It will be clear that mechanically such a mode of construction without any secondary modifications will necessarily only be possible for small plants, yet such local Siphonales as *Caulerpa filiformis* (fig. 3) and *Codium* may attain relatively large dimensions: they may attain a height exceeding one foot. How is this achieved? *Caulerpa filiformis* is abundant, anchored in sand at and just below low-water level of spring tides in parts of False Bay such as St. James. Cross- and lengthwise sections of any part of this plant will show two things: the outer bounding wall of the plant is thick and from this outer wall there are numerous ingrowths of cellulose. These ingrowths are not cross-partitions dividing the plant into cells. They correspond rather to the 'skeleton' of a sea sponge or a loofah sponge, so that the inner cavity of the plant is continuous throughout although the connecting passages may in places be tortuous (fig. 4). We get a model of the essential construction of a *Caulerpa* if we imagine a loose-meshed loofah sponge bounded on the outside by a thick wall. In *Codium* the plant-body is built up of a number of coenocytic or non-septate filaments. In cross-section (fig. 5) an outer region of relatively short, broad branches or utricles surrounds an inner plexus of thin, elongated filaments. The male and female gametes occur in organs known as gametangia which are borne on the utricles. This partly accounts for the spongy feel of *Codium* which is a feature characteristic of its various species. There are a number of South African Codiums, some of which have a rounded, forking plant-body while others are prostrate lobed expanses.

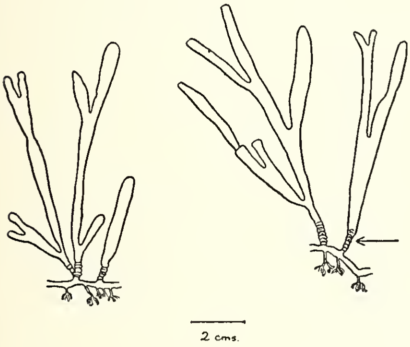


FIG. 3

Caulerpa filiformis

This plant is not built up of cell units like the great majority of plants of comparable size.

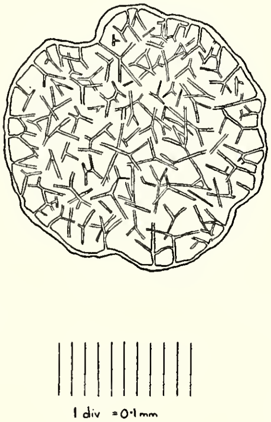


FIG. 4

Transverse section of *Caulerpa filiformis* at position indicated by arrow in FIG. 3. Note ingrowths from outer bounding wall.

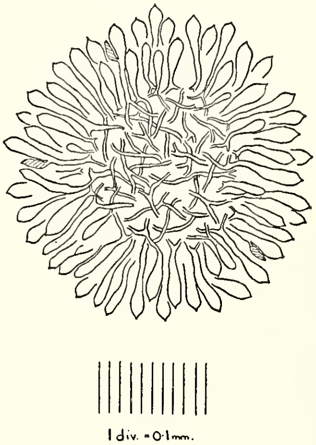


FIG. 5

Transverse section of *Codium fragile* showing outer layer of club-shaped branches or utricles and inner region of intertwining filaments. Some of the utricles bear gamete containing organs or gametangia (cross hatched).

The Siphonales show a number of interesting structural features but it would take too much space at present to consider these, and further, they are mostly plants of warmer seas than those found around the south-western Cape, although a number of these plants are found on our east coast and on the coast of Portuguese East Africa. The genus *Codium*, however, is widely distributed and species are found in both warm and cold waters in South Africa as well as in other parts of the world.

BROWN SEAWEEDS (PHAEOPHYCEAE)

The great majority of brown algae are confined to marine habitats and the few fresh-water species are small and insignificant. The brown colour of these plants is due to the presence of the pigment fucoxanthin. A chlorophyll complex different from that found in green algae is present, but its presence is masked by the fucoxanthin. Brown algae contain little or no cellulose but instead there occur a number of complex polysaccharide compounds not found elsewhere in the plant kingdom. Of these, alginic acid and its derivatives are of considerable economic importance.

The group shows a fair range of variation of size, structure and life-history, but none of the brown algae are as simple as the simplest green algae.

To dwellers of the western Cape the most familiar brown seaweed is the sea trumpet or sea bamboo, *Ecklonia maxima*. The sea bamboo occurs chiefly in shallow water to a depth of about 30 feet below low-water level of spring tides, but to a limited extent it occurs above low-water level of spring tides. It grows in the colder waters off the west coast and extends eastwards as far as Cape Agulhas. Adult plants vary from a few feet high to a height of somewhat over 30 feet.

The plant consists of an elongated stipe (fig. 6) which is attached to a rocky surface by means of a branching holdfast. Above, the stipe ends in a float or bladder beyond which is a flattened axis (primary blade) bearing numerous flattened segments. The bladder and hollow stipe give buoyancy to the plant so that the leaf-like segments are kept afloat at the surface of the sea. The name sea trumpet originated from the use of part of the dried hollow stipe and float by Malay fishmongers as trumpets for proclaiming their wares. On the leaf-like segments (or sporophylls) large, slightly raised areas occur in which microscopic hairs (paraphyses) and sporangia are crowded together (fig. 7). Each sporangium produces numerous motile asexual reproductive bodies or zoospores. These zoospores germinate to form microscopic, filamentous male and female plants (fig. 8). The female plant produces eggs or ova which remain just outside the opening of the cells or oogonia which produce them, one ovum being produced in each oogonium. From the male plant motile male gametes or spermatozoids are liberated which fertilize the ova. The fertilized ova give rise once again to large zoospore-producing plants. Thus we have a regular alternation of large spore-producing plants and small gamete-producing plants.

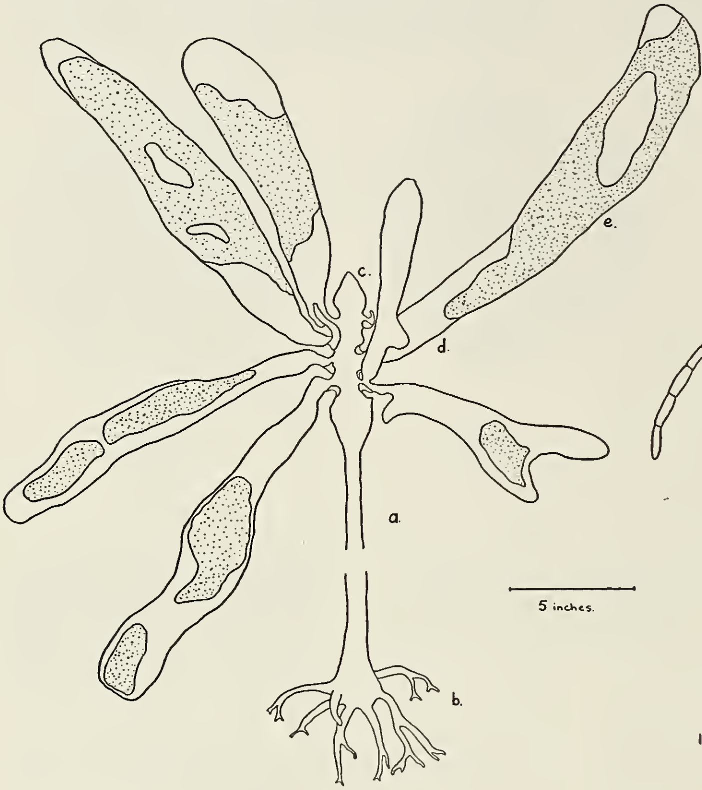
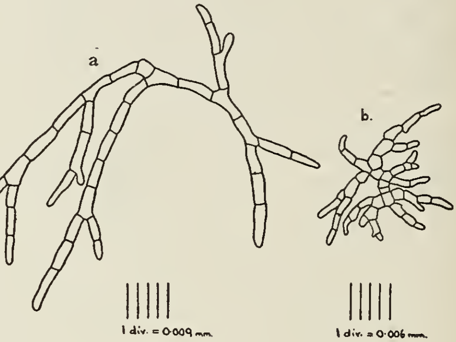


FIG. 6

Young adult of sea bamboo, *Ecklonia maxima.*
a = Stipe. b = Holdfast. c = Primary blade.
d = Sporophyll. e = Fertile region.

FIG. 8

Sexual plants of sea bamboo:
(*a*) Female plant.
(*b*) Male plant.
Modified after G. F. Papenfuss.



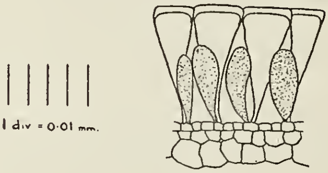


FIG. 7

Transverse section of fertile region of sea bamboo. Stippled structures are zoosporangia and larger clear structures are sterile hairs or paraphyses.

The sea bamboo is a member of the Laminariales which are frequently referred to as kelps. Two other large kelps are also found on the west coast—*Laminaria pallida* and *Macrocystis.* The former can be seen growing among the sea bamboos. It is a smaller plant attaining to about half the height of the sea bamboo and it also has a simpler form (fig. 9). The distribution of *Macrocystis* is very limited on South African coasts. Both *Laminaria* and *Macrocystis* have a similar life-history to that of *Ecklonia.* The South African cold-water kelps are larger than those of Western Europe but they are a good deal smaller than the giant kelps of the Pacific coasts of

North and South America. The small kelp *Ecklonia biruncinata* is often a prominent feature of the seaweed vegetation along the southern part of the east coast of the Union.

Dictyota is an example of a smaller, more delicate, brown seaweed. A few species of *Dictyota* grow on South African coasts. Perhaps the commonest species of the south-western Cape is *Dictyota dichotoma* var. *intricata* (plate 2), which is a decidedly smaller plant than *Dictyota naevosa* which latter species is common in the warm waters to the east of Cape Agulhas but occurs also at Cape Agulhas and in False Bay. There are male, female and spore-producing plants of *Dictyota*: the asexual spore-producing plant alternating with the male and female plants. In size and general form all these plants are similar as in sea lettuce and unlike the sea bamboo.

The wracks are brown seaweeds which do not have an alternation of asexual and sexual plants. These plants (Fucales) form dense intertidal communities on the shores of Western Europe. With one exception they are not a prominent feature of South African shores. That exception is *Bifurcaria brassicaeformis* (plate 2). This plant is often very common at low intertidal levels in localities between Cape Town and Agulhas. There are

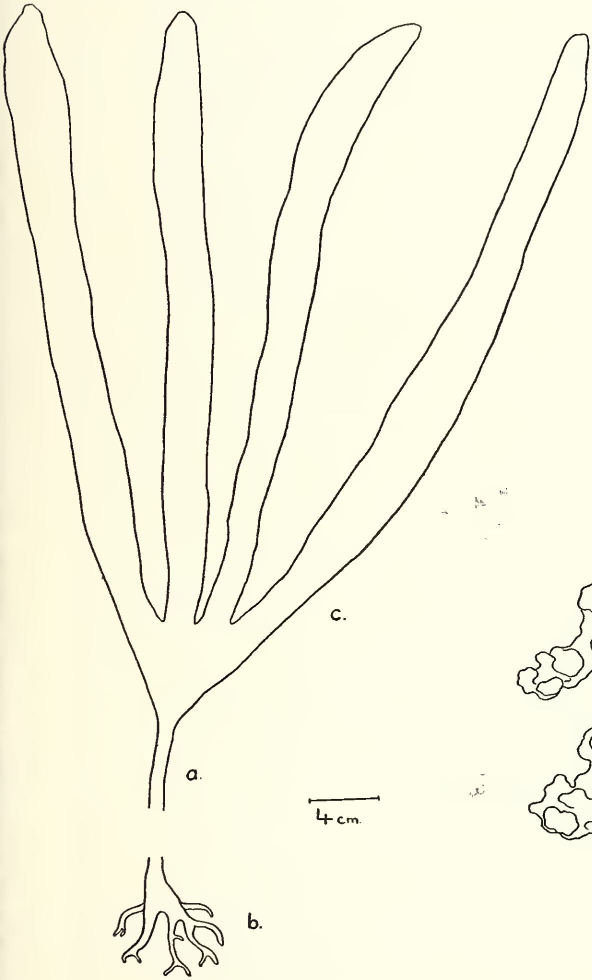


FIG. 9

Laminaria pallida.
a = Stipe. b = Holdfast. c = Frond.

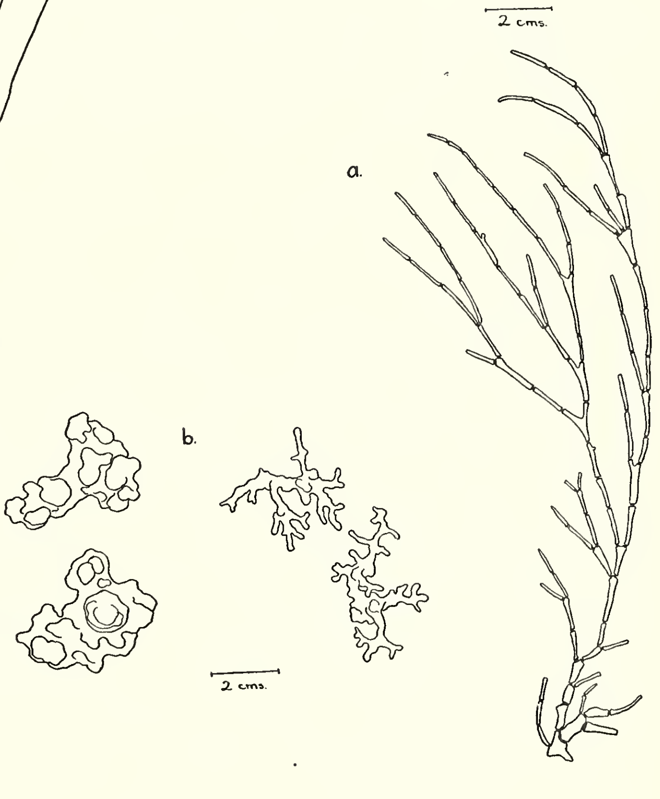


FIG. 10

Examples of Corallinaceae:
(*a*) *Amphiroa ephedraea.*
(*b*) Two prostrate, non-articulated species.

separate male and female plants of this species although in False Bay plants are sometimes found bearing both male and female organs. The sexual organs are borne within flask-shaped cavities on fertile regions. In another Cape species (*Bifurcariopsis capensis*) male and female organs are borne on the same plant. *Sargassum* also belongs to this order and these plants have frequently quite a complex form. In all the Fucales new sexual plants arise from a fertilized ovum and hence the life-history is of a simpler kind than those of *Dictyota* and sea bamboo.

Red Seaweeds (Rhodophyceae)

As with the brown algae, the great majority of the red algae are also marine although there are a few fresh-water genera. A chlorophyll complex of pigments is present but this complex differs in a few respects from that found in Chlorophyceae and in land plants. The chlorophyll complex, however, is masked by the presence of phycoerythrin and phycocyanin. Phycoerythrin (like phycocyanin) is soluble in water and is the red pigment lost so readily from many red algae. The colour of Rhodophyceae varies, and depends chiefly on the proportion of the various pigments present in a particular species. Some of these plants are an exquisite clear red colour. One of the most beautiful species in this respect is *Delesseria sanguinea*, found on British coasts but unfortunately not found in South Africa. *Plocamium corallorhiza* (plate 2), which is a common species off South African coasts, is perhaps one of our most beautiful species of red seaweeds. Its colour varies from a clear dark to medium red, but it may also be of pale colour with or without a greyish purple overtone. A clear dark red colour is seen in the common cold-water *Champia lumbricalis*. Other red seaweeds are blackish-red, such as *Gigartina radula* and *Gelidium pristoides* (plate 2), or brown in colour such as *Aeodes orbitosa*. Comment has already been made on the green colour of *Hypnea spicifera*.

The amount of cellulose present in red seaweeds is not high and is normally very low, but other polysaccharide compounds are prominent. Among these is the substance agar or agar-agar which is important in bacteriology, in meat- and fish-canning, and in sweet manufacture. In spite of intensive investigations, especially those carried out by the Germans before the Second World War, agar has not yet been synthesized and so can only be obtained from certain red seaweeds.

Some red seaweeds have an incrustation of lime in their tissues. This is chiefly found in plants of the family Corallinaceae, which family is characterized by a heavy deposition of lime in the plants included in it. Corallinaceae includes two main types of plant—one type comprises plants with an upright growth and showing an articulated character (fig. 10*a*), and the other type comprising plants of a prostrate habit in which articulations are absent (fig. 10*b*). Small prostrate species may be found growing on other seaweeds. Other prostrate species, including the larger ones, cover stones or creep along the surface of rocks. On the shores of the south-western Cape they may be a conspicuous feature of lower inter-tidal levels as on more or less flat rock surfaces at low-water level of spring tides with scattered ear-limpets (*Patella cochlea*) and few seaweeds other than encrusting Corallinaceae. These plants may also largely cover the sides and bottoms of shallow pools in which otherwise but limited algal growth is found. An example of this is illustrated in plate 3A, which is a photograph of a shallow pool at Intafufu on the Pondoland coast. Encrusting Corallinaceae play an important role in the building of coral reefs; indeed there could be no coral reef were it not for the cementing activity of these plants. To quote from Stanley Gardiner's book *Coral Reefs and Atolls* (1931): '. . . no coral reef is known in the Indo-Pacific which could be conceived as reaching the surface and forming a firm front to the ocean without their help.' Usually, however, they form a minor part of the material of the whole reef which consists chiefly of the 'skeletons' of the colonial coral animals. Some reefs, however, consist largely or even predominantly of encrusting corallines. Thus the windward reefs of Bikini consist almost entirely of encrusting corallines.

The plants of the other subdivision of the Corallinaceae show an upright growth and present an articulated appearance due to the presence of successive narrow zones of uncalcified tissue. Some of these plants are of considerable beauty. One of the most beautiful of the local species is *Amphiroa ephedraea* which may be of a pink or purple colour with narrow black-coloured, uncalcified zones at regular intervals. The branches of this plant are rounded, and it shows a dense, bushy growth. Figure 10*a* shows a portion of a plant spread out to illustrate its articulated character and its branching.

In a minority of red seaweeds there is no asexual spore-producing generation, only sexual plants occurring in the life-cycle. Local examples are provided by two species of *Chaetangium* which grow not far below high-water level of neap tides. *Chaetangium ovale* (fig. 11*a*) has a very simple form, being essentially an elongated hollow sac with a small attachment disc at its lower end. It is

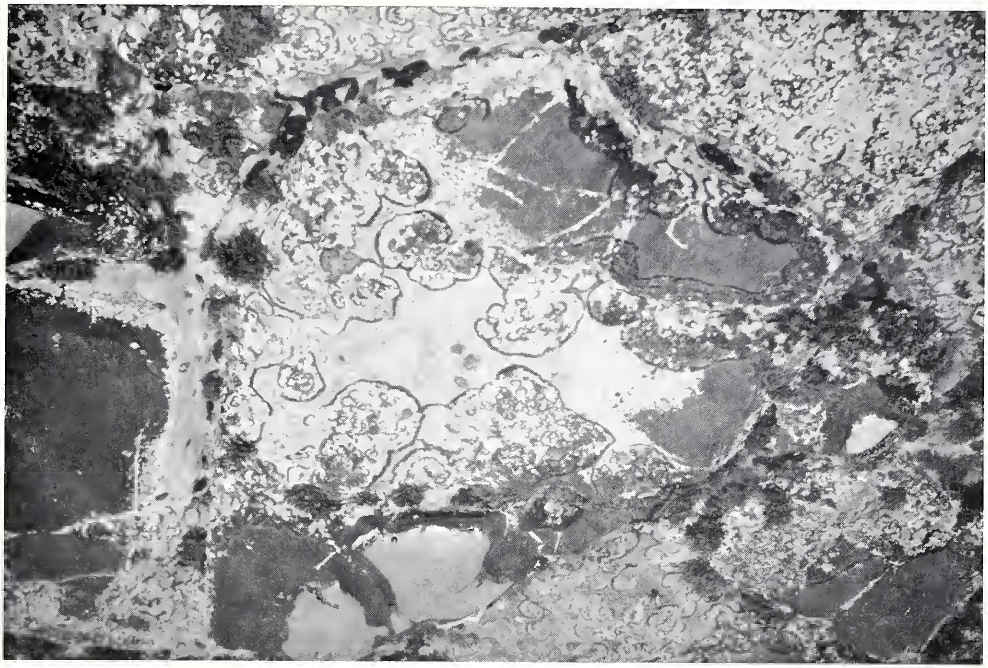


PLATE 3A
Rock-pool on Pondoland Coast (Intafufu) showing abundant growth of prostrate Corallinaceae.

PLATE 3B
Cape laver, *Porphyra capensis*, at high-water level of neap tides, Melkbosch.

brown or reddish-brown in colour. The mature female plant may be picked out by virtue of small, more or less spherical, structures projecting into the cavity. These are the fruiting bodies and are visible as small circular areas on the outer surface of the plant. *Chaetangium ovale* varies in length from less than a centimetre to a length of 10 or more centimetres. The size attained by these plants is related to the temperatures of the waters in which they grow, the lower the sea temperature, the larger the plants. *Chaetangium erinaceum* (fig. 11*b*) has a much more complex form and is very variable. It is often found on those parts of the shore where there is some inflow or seepage of fresh water. In colour it is medium to dark brown or brownish-red. It has a holdfast from which one or more flat, irregular branches arise, the branches bearing soft spine-like outgrowths from the flat surface and margins. Occasionally the plant bears a large elongated bladder recalling *Chaetangium ovale*.

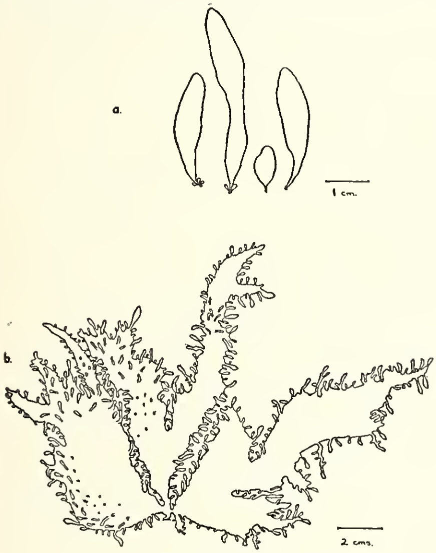


FIG. 11

(*a*) *Chaetangium ovale.*
(*b*) *Chaetangium erinaceum.*

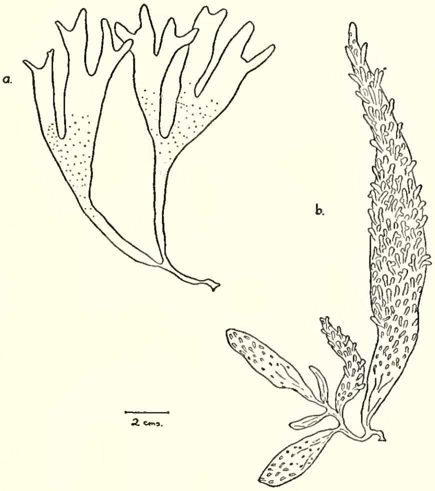


FIG. 12

Gigartina stiriata:
(*a*) Asexual (tetrasporic) plant.
(*b*) Sexual plant (female).

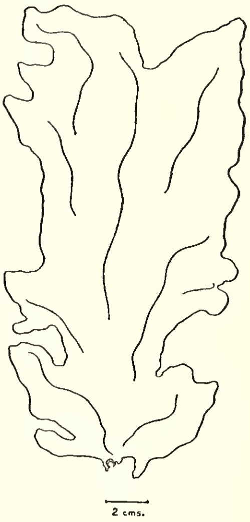


FIG. 13

The Cape laver,
Porphyra capensis.

The majority of red seaweeds reproduce both sexually and asexually, asexual reproduction being accomplished by means of non-motile spores produced in groups of four and called tetraspores. The tetraspores are produced on a distinct plant which bears no other organs of reproduction. Thus as in *Ulva* there is an alternation of sexual and asexual plants. In most species the male and female organs are borne on distinct plants. Consequently most species of red seaweed are represented by three kinds of plant—male, female and tetrasporic. Usually all three plants have the same form and structure, except for the reproductive organs, and are of the same size. This, however, is not invariably the case. In some species the male plant is of smaller size and in a few species one of the three plants is of quite a distinct appearance from the others. The outstanding local example of this is afforded by *Gigartina stiriata*. The asexual or tetrasporic plant is flattened, is branched in one plane, and is without small branches or outgrowths of tissue (fig. 12*a*), while the sexual plant is more irregular in its branching and bears numerous soft, relatively large outgrowths (fig. 12*b*). So distinct in appearance are these plants that at one time they were thought to belong to distinct species, the sexual plant being known as *Gigartina stiriata* and the asexual plant as *G. burmanii*.

One small group of the red seaweeds stands apart from the others in a number of respects and is regarded as forming a distinct sub-class (Bangioideae). One genus of Bangioideae is cosmopolitan, being widely distributed over the coastlines of the world. That genus is *Porphyra* or laver. Not only is *Porphyra* widely distributed but it is frequently an important constituent of seaweed vegetation within the region of ebb and flow, and it is also an important edible seaweed. The genus is represented on

South African coasts by the Cape laver, *Porphyra capensis.* Although widely distributed on South African coasts, the Cape laver is found most abundantly in cold waters. The plant is a thin expanse of tissue—one cell thick—attached to rock by means of a small disc. It varies much in colour and size. Its general form also varies a good deal and so it can only be adequately represented by a series of sketches; the general character of the plant, however, is represented in figure 13. It is largest and of deepest colour in cold water where it often forms dense communities near high-water level of neap tides (plate 3B).

In this short essay it has been possible only to refer to a few common seaweeds, but it should not be forgotten that the seaweed flora is both varied and rich in species. Many different species can be found on the shores of south-western Cape, and moving eastwards from Cape Agulhas an increasing number of species are encountered. Some of the east coast seaweeds have much beauty and others are of curious construction and reminiscent of tropical seas.

I wish to thank Miss J. M. Graves for drawing figures 1 to 13 and Mr. R. H. Simons for taking the photograph for plate 2.

Flowering Plants of Africa

By R. A. DYER

THE coloured illustration distributed with this copy of the *Journal of the South African Botanical Society* appeared originally in the pages of *Flowering Plants of Africa.* The publication of the first volume of this work in 1921 under the title *Flowering Plants of South Africa* was made possible by the generosity of a number of private people. Foremost among the many benefactors was Mrs. Henry Burton, to whom the first volume was gratefully dedicated by the founder and first editor, Dr. I. B. Pole Evans; while the contribution to South African botany of the evergreen Thomas Pearson Stokoe was commemorated in the dedication of volume 5, 1925.

The desire of the promoters was to stimulate local appreciation in our unique indigenous flora which is held in such high regard throughout the botanical and horticultural worlds. That there is now widespread support for botanical works devoted to our flora is evidenced by the large number of people who have subscribed to recent publications such as the *Wild Flowers of the Cape of Good Hope* by Elsie Garrett Rice and R. H. Compton.

It is felt that more enthusiasts should and would subscribe to *Flowering Plants of Africa* if it were more widely known, and this opportunity of bringing it before the notice of the members of the Botanical Society of South Africa is very greatly appreciated.

The publication is now in its 30th volume, and the changing of the title to *Flowering Plants of Africa* was to make it consistent with the inclusion of illustrations of plants growing anywhere in Africa. Both for social and scientific reasons the African flora should be studied as a whole and it is good for us all to have this broad horizon of interest.

Volumes 1–26 were printed and hand-coloured overseas by Messrs. L. Reeve, The Oast House, Brook, Ashford, Kent, which firm still holds a small stock. From volume 27 the publication has been in the hands of the Government Printer, Pretoria.

Under present conditions the work is issued in parts twice annually, each part containing ten beautifully reproduced coloured plates and text. The present subscription is 15*s.* per part, four parts (two years) comprising a volume. Volumes bound in cloth are £4 4*s.* each, and in full morocco binding £5 10*s.* each.

The order form which is included in this Journal is for filling in and posting direct to the Government Printer, Pretoria. Any further information required about *Flowering Plants of Africa* will be gladly supplied by the Chief, Division of Botany, P.O. Box 994, Pretoria.

The work is also obtainable in Afrikaans.

An Australian Plant Propagator Looks to South Africa for New Plants for Australian Gardens

By THOS. A. BROWNE

I HAVE had the good fortune to be associated with seeds and plants for the greater part of my life. More than fifty years ago I joined the staff of one of Australia's leading seed and plant houses as a boy, with little thought of the lifelong pleasures this occupation was to bring me.

The principals in the business were two brothers who had a great love for plants and flowers, and although trading as nurserymen were really only dealers, as all plants sold were procured from nurserymen, but their practical experience in their own gardens qualified them to give sound advice to customers.

I make this statement in pointing out to prospective plant purchasers that because a person is selling plants it does not necessarily mean that he is qualified to give proper advice on their culture. It is the nurseryman who grows plants for the love of them as well as for profit who is usually able and very willing to offer sound advice.

It was in my early teens that I made my first acquaintance with South African plants. On my way to work I passed a nice garden in which grew a fine plant of *Strelitzia reginae.* This plant was in bloom when I first noticed it and it fascinated me. After a few days of intense longing to possess one of the flowers I finally plucked up courage to ask for one. The owner's reply that he never sold one for less than two shillings dashed my hopes to the ground. A fourteen-year-old boy and two shillings were not often companions in those days. However I continued to admire them free of charge. My second introduction to South Africa was no less impressive than the first. A nurseryman apparently noticing my love of flowers brought me a bloom of *Protea cynaroides.* This put South Africa on the map as far as I was concerned. Some years later when I possessed a garden of my own these two flowers were uppermost in my mind as desirable subjects. But desiring them and obtaining them were two different matters, and it was only after several years of inquiries among quite a number of nurserymen that I was able to secure them.

At that time quite a number of African plants were growing in Australian gardens. Subjects such as *Virgilia capensis, Calodendron capensis,* Podalyria, Leonotis and Ericas were frequently seen, but Proteas, Leucadendrons, Leucospermums and many other African gems were extremely rare. African bulbous plants have always been with us and in some areas have run wild. I refer particularly to Watsonias. Others of long standing in our gardens are Lachenalias, Sparaxis, Babianas, Agapanthus and Kniphofia. But over the years there has always been a regular demand for the good things of African origin that could never be met by nurserymen. Individual blooms would pop up regularly at shows or in seedsmen's windows. Articles describing the beauty of these flowers, with illustrations, occasionally appeared in gardening publications, but little effort was made by growers to meet the demand for them. I recall many unsuccessful efforts to secure plants of these beauties for particular customers. I feel that one of the reasons for their lack of popularity among nurserymen is the uncertainty of germination of the seed of Proteas, Leucospermums and Strelitzias, and the difficulty of propagating Proteas by cuttings. So while the demand for readily propagated plants exceeds the supply nurserymen in general just will not bother with them. But this attitude will not get these beautiful plants into Australian gardens.

Some ten years ago when contemplating retirement from city business to my home in the Blue Dandenong ranges, about 25 miles from Melbourne, I decided to devote my time to the propagation of the more difficult garden subjects, including many of my old friends from Africa. By chance I was fortunate in that my inquiry for seeds was handed to the late Miss Stanford, a delightful personality whose great love of flowers was so well illustrated in her book *A Garden of South African Flowers.* I recall with pleasure much of her correspondence regarding African natives which was of considerable assistance to me. My garden at Upwey is some two acres in extent and situated in a gully with an ever-flowing creek as one boundary. In the shady and moist section I grow large numbers of Rhododendrons and Azaleas, while the higher slopes are reserved for African and Australian natives which appear to thrive in happy association. There is a definite botanic affinity between the flora of these two countries both in structure and cultural needs. I find that where an Australian shrub or tree thrives, an African subject of the same order does likewise. Of course each have their own little peculiarities, but generally speaking it is safe to assume that where an African subject thrives it is quite safe to plant its Australian brother. Many of my African subjects have been blooming for several years and are of great interest to visitors. Among a host of the beauties of both countries one plant stands alone. It is the *Serruria florida*. One of my plants of this very lovely African at present carries a head of more than thirty blooms. It has been in bloom for more than two months and looks good for at least another two or three weeks. Some days ago a visitor with a colour camera waited at the plant in a chair for an hour until he got some blue sky behind it before photographing it. I pass this plant many times a day, yet it regularly pulls me up to admire it. My second favourite is the *Dais cotinifolia* or, as I generally call it, the 'African Daphne'. This plant is the subject of much admiration when in bloom. Last year an officer of the Public Gardens at Canberra Federal Capital Territory visited my garden and saw the Dais. He promptly asked me to send a hundred plants by air for planting in the Gardens. I can imagine the display they will put up in a few years. These plants are so attractive here that over the past few years I have distributed more than 5,000 to nurserymen. As these plants come into flower in private gardens, I feel that the demand for them will increase tenfold.

The Proteas, which are always a great attraction when in bloom, appear to thrive in any soil in Southern Australia. They vary quite a lot in habit in the various types of soil here. My own soil is of a close, heavy nature, and Proteas generally develop into sturdy, bushy plants without the tendency to sprawl over the ground as they do in the loose, porous soils in some parts of the hills. For many years the only Protea seen in our gardens in any numbers was *P. mellifera*, a sturdy variety that grew into a large bush without much colour in the flowers. In moving around one encountered an occasional *P. cynaroides*, but other varieties were practically unknown. Even now nurserymen are glad to secure any variety of Protea and usually ask me to cover them for Proteas without specifying any particular sort. My favourite apart from the above are *P. neriifolia*, *P. Susannae* (very popular now), *P. longiflora*, *P. latifolia* and *P. compacta* (how the latter got its name I do not know—mine is a tall, rangy grower! Perhaps the *compacta* refers to the flower?). The two babies, *P. rosacea* and *P. scolymocephala*, are delightful little shrubs. Most of my Proteas are now seeding freely and I find that in this area of fairly high rainfall I have to cut the dried heads about February or March, hang them in muslin bags in a shed until April, then clean the seed and sow immediately. With me, seed cleaned in the autumn and held over until spring loses quite a percentage of its vitality. I have not yet discovered any method of handling Leucospermum seed that will improve its germination. My best effort from both African and local seed is about 10 per cent spread over three years. More often I get less than 5 per cent. I really think Leucospermum plants should be priced at pounds rather than shillings, if only for the mental distress and time wasted watching for that crack in the surface of the soil that denotes some sign of life. But to see *L. Bolusii* in bloom compensates for all the earlier troubles, while *L. reflexum*, *L. Muirii*, *L. lineare* are also worth going to a lot of trouble to raise. The Leucospermums seem particularly hardy, as last summer we had the longest spell of dry weather here for many years. nearly five months with less than an inch of rain. Several of the Leucospermums lost most of their foliage, which dried off almost to the extremities of the growth, yet the remaining inch or two of leaf-growth are now carrying flower-heads.

Another plant that is going to be a good ambassador for South African flora here is the *Virgilia divaricata*. I first started distributing this fine shrub to nurserymen three years ago, and many of the plants are now flowering. The general opinion is that there is no comparison between *V. capensis* and *V. divaricata* for general garden work. *V. divaricata* by reason of its fine green foliage and dwarf, shrubby habit seems assured of great popularity. One nurseryman who has had many hundreds of plants from me is sending them out in dozens for drive work. Many specimens are particularly rich in the colour of their flowers. In my own garden I have a specimen plant about six feet high with a spread of eight feet. Its bottom branches are resting on the ground. The colour of the flowers is particularly deep. I had fertilized the flowers of this plant a few weeks ago. Most Virgilias do not seed here. We apparently have not the right type of insect for pollinizing. It is in the growing of species of Ericas that we in Australia are very much behind the gardeners of South Africa. Most of the Ericas we grow here are hybrids. After noting the colour plates of the fine species shown in *Wild Flowers of the Cape of Good Hope* I feel that there must be room in our gardens for at least some of these. Of course the uncertainty of the life of an Erica in a private garden somewhat mars their popularity, but in gardens of those who know how to treat them and what not to do to them they will always be popular. I venture to say that if you have a healthy Erica in the garden for three or four years, even if it does die for some unknown reason, it has well repaid the cost of planting it.

I have fifteen varieties new to Australian gardens to distribute to nurserymen this year, and I feel sure that quite a number of them are destined to a permanent place among other South Africans here.

It may be that some flower-lovers in South Africa are interested in Australian native shrubs. While all the states are richly endowed with attractive flora, West Australia stands alone in this respect. Its cut flowers are sent by air regularly to the Eastern States, and many tourists from the East are regular visitors to the West during September and October, the best months for nature displays.

The following are some of their finest, easily grown shrubs: *Hovea elliptica*, *Chorizema cordata*, *Dryandra formosa*, *Boronia megastigmor*, *Acacia Drummondi*, *Banksia coccinea*, *Banksia Menziesi*, Geraldson and Wax-flower. There are a host of other fine shrubs and trees in this country, but I think the above varieties would be a good introduction to Australian flora. They are easily raised from seed although some may take a month or two to germinate. Give them the same treatment as South African seeds and you will have no trouble. The Forestry Department of West Australia issues a list containing some of the best of their natives together with cultural directions. Most of the seeds are priced at 2*s.* 6*d.* per packet. I usually write to the Conservator of Forests, Perth, Western Australia.

Growing Proteaceae in the Summer-rainfall Area

By MARIE M. VOGTS

As a plant family the Proteaceae are probably the most decorative and spectacular of the South African flora. Yet it is only in recent years that the Proteas have found their way to private gardens to any noticeable extent.

The reason is not that they have been unknown or unappreciated. After all a protea (*P. neriifolia*) was the very first South African flower on record to be described, almost fifty years before van Riebeeck landed in Table Bay.

The fact is not that the Proteaceae are difficult to cultivate. A little special treatment is, however, essential. It is often a lack of this knowledge that makes gardeners say that the Proteas can only grow in winter-rainfall or frost-free areas, on rockeries or on mountain slopes. But if the Proteas are to be grown as garden flowers they need certainly not be limited to such so-called ideal conditions.

Furthermore if one gardener has a measure of success, it is a temptation to attribute this to his green fingers. There is no such thing as a green finger. If seeds do not germinate there must be a good reason; if Protea plants die after two years or so, they are not touched by an evil spirit, but there must be some tangible condition that has affected them. And if the Proteas of my neighbour grow for four years without flowering and mine bloom within two years, it is not just fate or his ill luck.

For seventeen years I have been trying to determine the causes why the Proteaceae often react disastrously, and to find a way to grow them under a wider range of conditions. My experiments have been mostly amateurish, although some have been undertaken with expert advice. My theories on which I have to work deductively are still miserably far from being scientifically proved or disproved. But in the course of time I have made a great number of observations, some of which may be of value to those who are interested in cultivating Proteas away from their natural habitat.

It may be an inspiration to know that in my present garden in Pretoria which is now only three and a half years old, the Blushing Bride grew in eighteen months from seed to seed-bearing. The *Leucospermum reflexum* flowered two years and three months after sowing the seed, i.e. one year and ten months after germination which took five months. They were then—that is in 1953—eight feet high. This year (1954) they are flowering so profusely that they have to be thinned out and have grown to twelve feet; they are really very spectacular. Their blooms, as well as those of *Protea cynaroides*, *Leucospermum tottum*, *L. nutans*, *Serruria florida* and a number of others, are quite as perfect—some even better—than those I have grown in the winter-rainfall area.

The first thing to consider in the cultivation of Proteas in the summer-rainfall area is the locality, that is, the place in the garden. And here by Proteas I mean the more beautiful of the 260-odd species of the four genera, Leucospermum, Leucadendron, Protea and Serruria, as well as a few species of Mimetes, Aulax and Paranomus. (I am doing my experiments with only about fifty of the most decorative species and varieties of species of the above-mentioned seven genera.)

To come back to the place in the garden, Proteas must have air. In areas where there are winter rains, overcast skies and even sea mists, the north side of the house or of a hedge is quite different from what it is where the low winter sun gets warm and sometimes hot in the middle of a winter's day, and the air is so dry that everything shrivels up. The Proteas of the summer-rainfall areas, like *P. caffra* and *P. Roupelliae* are found far more frequently on the south side of the hills than anywhere else. The Proteaceae love air, even wind, from the south as if the south-easters of the Cape had got into their blood.

This does not mean that Proteas will not grow in a north-facing garden; the only thing is they need some ventilation. Our own house is situated on the northern slopes of a hill and I have not noticed any ill effects. If a garden is, however, subject to very strong winds, a windbreak is naturally advisable, but put the break as far to the north side of the protea garden as possible.

Although the Proteas do not appear to object to some wind, ironically enough wind is, as far as I have been able to observe and test, often a contributing factor to the dying-off of some of the taller Proteas, Leucospermums and silver trees after five or six years. This difficulty can be overcome to some extent by grouping the plants.

Grouping. Plants of the winter-rainfall area tend to grow more rapidly when cultivated in the summer-rainfall area, obviously the extra winter-watering being one cause, though there are probably a few other interesting reasons as well. The result is that the plants are not so well rooted, or as strong, or as compact as they could be. I find that if three or four plants are grown together they form one beautiful compact shrub, able to withstand a great deal of wind and, what is more, to grow quite old without showing that unfortunate tendency of becoming straggly.

The photograph shows a grouping of one *Leucospermum reflexum*, one *L. nutans* and one *L. attenuatum* on one spot —a circle of 15 inches in diameter. I wish to refrain from theories in this article, but grouping Proteas has proved such a success that I hope to determine what added help (e.g. mycorrhizal or other) they give one another by the intertwining of their roots. It seems that they grow better, flower better, seed better, and that the advantage is not limited to that of mutual support.

Another favourite and successful grouping is *Serruria florida* with *Serruria artemisiaefolia;* the Blushing Bride grows tall and its unattractive lower branches are hidden by the *S. artemisiaefolia.* Two *L. reflexum* with two *L. nutans* or *L. Bolusii* make a good group, while three *Protea cynaroides* make a perfect bush. I find, however, that it is unnecessary to group *L. tottum* and *L. catherinae.* One plant, especially of *L. tottum,* makes just as good a shrub as two.

Grouping is naturally not at all necessary nor even advisable or desirable on good well-drained soil, or mountain slopes of the winter-rainfall area. But even in that area I have found that grouping gives very satisfactory and spectacular results where conditions are unfavourable. I have grown Proteas in almost pure river sand, I have grown them in situations where, without drainage, the water-level has been as high as twelve inches from the surface for weeks during winter, and there—especially in the loose sandy soil—the grouped plants were far more successful than the single ones.

In any case Proteas are social plants. They also like the company of heath. (Fortunately heath is really easy to cultivate and though it is not dealt with here, I can just add that it requires exactly the same soil conditions as Proteas.)

Soil. There is of course as far as soil conditions are concerned, no difference as to whether Proteas are grown in areas with winter rainfall or with summer rain, or with rain throughout the year, or no rain at all. Nowhere do they like manure deeper than perhaps a foot —even compost is better applied very superficially. Nowhere can they grow on solid shale or rock, although stony soil is excellent. If the holes, three or four feet deep, have to be dynamited, fill them up six months before planting, with soil and a few stones, but no manure. Proteas planted in holes with manure deeper than two feet have a way of dying off after two or three years.

A grave trouble in summer-rainfall areas is that the soil is often alkaline and this may be only in small spots here and there and difficult to detect. Proteas dislike lime intensely. They are not happy in neutral soil either—they want some slight degree of acidity.

The other day I was asked to give some advice on the Proteas of a very promising indigenous garden just outside Pretoria. There were a few *P. mellifera* growing beautifully and young healthy heath coming on in one spot. Some yards away the other two-year-old Proteas were in a pathetic state. I discussed possible causes with the gardener; the situation was ideal, the soil perfectly drained, the treatment in every respect the very best as far as I could judge from my experience. It was then decided to have the soil tested. As I had surmised, the soil was neutral. In comparison with my garden(5.4 — 5.6) it could be regarded as almost alkaline. Sulphur was then added, 1 lb. to 100 square feet, with excellent results.

About two months ago I noticed in my garden a *L. tottum* dying—more than half the shrub was already dry and brown. I found the garden boy had added some lime to it which was intended for some other shrubs. In desperation I gave the small Leucospermum three teaspoonfuls of aluminium sulphate, and I could hardly believe my eyes when green leaves began to appear from those dry branches within a few weeks.

I do not advise aluminium sulphate as a rule. As far as tiny plants are concerned nothing is better than tea leaves. For bigger plants, even if the soil has the right degree of acidity, a mulch of pine needles or wattle leaves is safe. I have noticed that Proteas grow exceptionally well on the site of old wattle plantations, although naturally they will not grow together.

Sowing and transplanting. The sowing period—the only one that is advisable—is exactly the same as in the winter-rainfall area: from middle March to end May.

Odd seeds, especially of *P. cynaroides*, will often germinate in spring, but losses are too great to recommend this even though the seeds may have been artificially heated or frozen.

Great care should be taken that the seedlings of those Proteas that germinate quickly like *Serruria florida* are protected from frost, as the young plants appear during the worst of winter. Strangely enough it seems that frost is a beneficial factor in seed germination. The longer the period of germination the higher the percentage after severe cold. My experience has been that I have had the optimum germination of *L. reflexum* and *P. barbigera* after heavy frost. Of course there is hardly any danger of these young seedlings being harmed by frost, as *P. barbigera* is exceptionally hardy and the germination period of *L. reflexum* is from four to six months. Yet despite the fact that a cold winter aids germination, the seeds have to go in while the earth is still warm.

Since the seed-beds have to be kept damp it appears that covering the seed with some compost or grass, which is often successful in the Western Province, is fatal here on account of the sudden heat of a winter midday. This causes 'sweating' and damages the germinating seed. Seeds should be sown so shallow that one is almost afraid that the watering will uncover them.

Here I should like to add something about the advantages of sowing seeds *in situ*. It does not, I admit, apply to the summer-rainfall area alone. But the advantages of seedlings standing *in situ* through their first summer, where there is summer rain, are naturally much greater than where there is a hot, dry summer to cope with.

If twenty seeds are sown on a small round bed with an eye to the desired grouping, and fifteen seeds germinate, three to five can be left there and the others transplanted when still very small. The few that are left undisturbed will almost without exception flower in sixteen months to two years from sowing date, depending on the species; while the transplants invariably take longer, and how much longer is due to the extent to which the roots have been nipped off or disturbed.

This method is of course quite impracticable for public gardens or big gardens with a minimum of labour, especially in areas with dry summers. Then one has to fall back on transplanting into tins for the sole reason of coping with the young plants until the winter rain falls. But for a private garden, and even bigger gardens in the summer-rainfall area, it is quite worth while trying if one is eager to have an arresting and colourful show within three years.

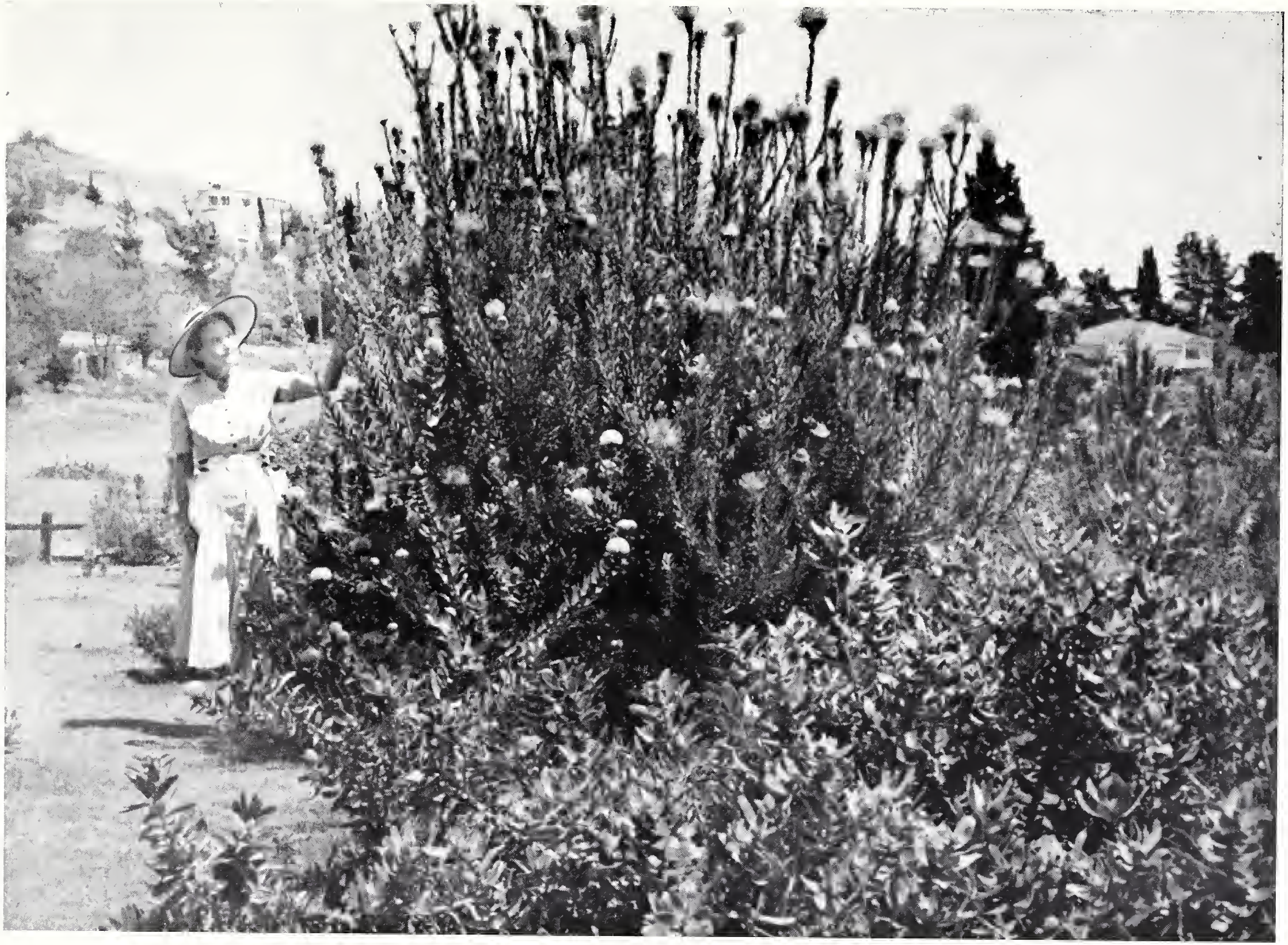
I do not advise sowing in tins or seed-boxes. I am still working on the effects of humidity and temperature, and I am not yet in a position to substantiate my reasons. But the fact remains that, over the years, far better results have been obtained from sowing in seed-beds.

For those who wish to start a garden in the summer-rainfall area and do not care to wait until the next April to sow the seeds, I can state that plants sent from the few reliable protea nurseries in the winter-rainfall area do very well. Some were sent to me as an experiment so that I could determine what size of plant could be recommended, as well as the best month of the year for transplanting. I have been very much impressed with results.

In other words, if protea plants are tinned or potted by someone who knows the plants and has expert knowledge in handling them, these plants can be a help when making a start. I must confess that I have also tried some that I transplanted more than three years ago, and they show very little growth and of course no inclination to flower. These plants have been treated like other garden shrubs—or more likely like forestry trees—by someone without specific knowledge of the idiosyncrasies of the Proteaceae.

But no matter how well the plants are tinned they must be transplanted deep and with great care, so as to disturb them as little as possible. It is better to transplant in spring or summer, as frost may cause a setback if plants are not yet established.

Frost. This year Pretoria has had a very severe winter with the worst frost for many years. The Proteas have stood the cold unbelievably well. I have in my garden a number of shrubs from the Lowveld and other parts of the country, which, I am sad to say, have suffered considerably even though they were covered tightly with thick grass screens. Not a single one of the Proteas was covered and none was lost except a few two-week-old seedlings of *Serruria florida* and one week-old *P. cynaroides*. True, the flowers that started to open in July were a little spoilt and the first bloom of the *P. grandiceps* got scorched, but the other buds opened perfectly and the plants themselves were none the worse. The leaves of the tips of the silver trees were slightly touched, but a few weeks after the last severe frost young leaves were coming out, and the plants are growing with new vigour. Increasing the winter water ration just then, that is August-September, is, I think, advisable.



[Photo: W. O. Kühne.

PLATE 4

In the background a grouping of *Leucospermum reflexum*, *L. nutans* and *L. attenuatum* forming one compact shrub.

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CALENDAR OF MEETINGS FOR 1955

Tuesday, 22 *March*, 8.15 p.m. Lecture Hall, Kirstenbosch.
Annual General Meeting.
Programme of Cine Films in colour by Dr. P. J. H. le Roux.

Tuesday, 26 *April*, 8.15 p.m. Lecture Hall, Kirstenbosch.
'The Architect in the Garden.' Talk by Milton F. Stern.

Tuesday, 7 *June*, 8.15 p.m. Lecture Hall, Kirstenbosch.
'Plant Names and their Origin.' Illustrated talk by Dr. M. R. Levyns.

Tuesday, 30 *August*, 8.15 p.m. Lecture Hall, Kirstenbosch.
'Water Gardening for the small and large Gardens.' Talk by Miss E. L. Stephens.

Saturday, 17 *September*, 3 p.m.
Anniversary Meeting, Karoo Garden, Worcester.
Tour of Garden by Mr. J. Thudichum, Curator.

Saturday, 24 *September*, 3 p.m.
A Botanical Ramble through The Hares' Farm, Cape Point. (Cars meet at Reserve entrance.)

Saturday, 8 *October*, 11 a.m.
Annual Gathering of Members, New Lawn, Kirstenbosch.
Followed by WILD FLOWER SHOW in the Lecture Hall, Kirstenbosch, 12 noon.

Saturday, 29 *October*, 2.30 p.m.
'Visit to a Member's Garden.' Mr. & Mrs. G. E. Williamson, Phyllis Court, Monterey Drive, Constantia. (Cars meet Kirstenbosch Main Entrance, 2.15 p.m.)

Sunday, 13 *November*, 11.30 a.m.
'Visit to Mr. H. N. Porter's Wild Flower Reserve, Betty's Bay.' (Cars meet Main Road, Betty's Bay, 11.30 a.m. Watch for signposts.) Bring picnic lunch. No fires.

Members are cordially invited to bring their friends along to the above Meetings.

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Watering and other treatment. Seedlings and seed-beds must be kept damp until summer rain starts. This is the only real labour attached to a protea garden. The bigger plants should be watered once a week during winter, but as most of them start to flower before summer rain falls, a little extra watering makes the blooms bigger and last longer.

Proteas grown here require no other special treatment. Mulching, as was mentioned above, is good even though there is summer rain. And seeing that no digging or loosening of the soil may ever be done near the plants, a lawn grass like Swaziland is most desirable here. This grass does not require lime or topdressing. It grows vigorously yet superficially and can easily be kept in check by hand. True, it dies off in winter to a dirty brown—but the contrast with the silvery green of the Proteaceae is striking and attractive.

I have only dealt with some of the aspects of the cultivation of the Proteaceae away from their habitat, and not with general treatment, selection of seed, and individual reactions that would be the same anywhere. As far as I can remember, articles on the general cultivation of Proteas have from time to time appeared in this Journal.

In conclusion I can only say that the majority of our Proteaceae may hail from the winter-rainfall area, but one must see how well they grow in other areas to believe it. I have never seen silver trees on Table Mountain or on Paarl Mountain grow more perfectly and beautifully than those near Sabie in the eastern Transvaal. The knowledge that anyone can grow them almost anywhere should be a promise for the future that the Proteaceae, whose own home on the beautiful mountain slopes of the Western Cape is being taken in slowly but surely by cultivation and habitation, will be preserved and nurtured, known and loved by generations to come.

NOTE:—*Leucadendron argenteum* = Silver tree; *Leucospermum* spp. = Pin-cushions; *Protea barbigera* = Woolly bearded Protea; *Protea cynaroides* = Giant Protea; *Protea mellifera* = Suikerbos; *Serruria florida* = Blushing Bride.—*Ed.*

Some South African Biennials and Near-Biennials and Their Cultivation

By H. F. WERNER

Definition and Sowing Times

AS defined in cold-climate countries, biennials are plants which are sown in one year and bloom in the next, when, after seeding, they die.

In countries with warmer climates, the period between germination of the seeds and blooming is reduced—so much so in fact that where the winters are comparatively mild (as at the National Botanic Gardens, Kirstenbosch), biennials (and near-biennials as mentioned below) can be treated very much like our spring and early summer annuals by sowing the seeds a month or two before these annuals are normally sown here (March), which means about January–February in the case of biennials. Or, in cold areas, say about December–January.

Raising the Plants

It is not intended here to deal with the basic principles of seed-sowing, as these principles are dealt with in a previous article.* It should be noted, however, that as the seeds in this instance are sown during the hottest season of the year with us in South Africa, extra precautions should be taken in shading and watering. A spot with a southern or eastern aspect which is shaded in the afternoon would be most suitable for raising the plants in the circumstances, unless artificial shade can be provided directly overhead. In the latter case when the seeds are up or seedlings have recovered after pricking out, the shade should be removed to prevent the plantlets from becoming 'drawn' and useless.

While the plants could be planted into permanent positions direct from their nursery beds or 'flats' (after pricking out), this would have to be done very carefully, choosing a dull day if possible, and shading the plantlets with twigs or other means until they recover.

A better method, used by ourselves, is to establish the plantlets in individual containers (4-inch earthenware pots or 2-lb. jam-tins) before planting into final positions. This method makes the problem of shading and watering after pricking out much less difficult, and ensures practically 100 per cent 'takes' at planting out.

Sowing *in situ* is not recommended, although sometimes good results may be possible, while self-sown seedlings can likewise be successful, especially in the wild garden or in the rock-garden.

Propagation by cuttings requires care in shading and watering as the very sandy soil mixture required in this instance dries out fairly quickly. Again, a cool, shady spot should be selected.

Finally, while the biennials (and near-biennials) are fairly hardy, in the case of the Highveld and similar areas the plants may require protection during the winter from severe frosts. (In the cold-climate Northern hemisphere countries this would mean protection of a glasshouse, heated in winter.)

Horticultural Merits

Our indigenous biennials and near-biennials provide some of the most noteworthy displays at the National Botanic Gardens, and the writer has no hesitation in advocating greater use of these plants by amateurs as well as Parks Departments, etc., than is at present the case.

They play an important part during the spring, early summer and summer, and provide, with their various heights, colour forms and general distinctive qualities, variety not so easily available in the annuals alone.

They find their place in massed plantings, borders, formal bedding schemes or the rock-garden with equal effect. Most are easily raised from seeds and the young plants grow vigorously given fair treatment. Diseases are conspicuous by their absence, while pests are few and easily controlled by the use of an insecticide.

All the subjects dealt with hereunder are sun-lovers and will respond to usual treatment given to most garden plants with which gardeners are familiar, in the way of soil preparation, watering, fertilizing, etc.

Description of Species

The number of 'true' biennials among our indigenous plants is perhaps limited, but a number of the perennials can be included here because we find these are best reduced, so to speak, to biennials where there is a tendency to lose vigour as a result of prolific blooming and seeding which, combined with growing conditions differing from those found in their habitats in the wild, may make them unsuitable for 'carrying over' into a further season.

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* 'General Hints on Raising Indigenous Plants from Seed', *Journal of the Botanical Society of South Africa*, Part XXXIV, 1948.

It will be noted that the perennials best treated as biennials are those which are not, horticulturally speaking, the 'herbaceous perennial' kind but are 'shrublets' in which regeneration is by seeds as opposed to natural vegetative multiplication at the root crown of the plant. As these shrublets, however, produce new top growth after flowering, this is often suitable as cuttings for propagation purposes.

In the listings below the heights supplied are average heights at flowering time, while the flowering times may also be regarded as approximate.

Anchusa capensis (Wild Forget-me-not): 1½ ft. September–November (or December). Bright blue or white. Easily raised from seeds and tends to be perennial, being in habit almost a 'herbaceous perennial' with stems arising from the old 'stools'.

A variety often found listed in horticultural catalogues is called 'Blue Bird', which is a compact form ideal for bedding work. This variety received an 'Award of Garden Merit' from the Royal Horticultural Society in 1937.

The white-flowered form of the species does not appear to have come into cultivation. In Hutchinson's *A Botanist in Southern Africa*, however, the plant Hutchinson collected is described as white-flowered, and I have, therefore, included this in the description.

Anchusa riparia (Wild Forget-me-not): 2 ft.–2½ ft. September–November (or December). Bright blue, mauve or white. This species is very similar to *A. capensis*, both in habit and appearance, and requires the same treatment.

A distinct form from Namaqualand with greyish leaves, but typical blue flowers, has been obtained and is at present under trial at Kirstenbosch.

In Miss Wilman's *Preliminary Check List of the Flowering Plants and Ferns of Griqualand West*, *A. riparia* is described as 'more often white or pink than sky-blue'.

There does not appear to be any marked difference between *A. riparia* and *A. capensis* botanically, and it may be possible that they are merely extreme forms of one variable species which has a wide distribution.

Arctotis acaulis (hybrids) ('Arctotis', 'Gousblom'): 1½ ft. August–November. Brilliant-coloured 'daisy' in seemingly endless colour variations, either self- or bi-coloured, which have evolved possibly through hybridization in gardens with such species as *A. breviscapa* (*A. leptorhiza*), *A. laevis*, etc., and have completely ousted the true species from cultivation.

The plants are bushy, being more or less as wide as tall. Old plants tend to persist and may be flowered a second year, but vigorous young plants raised from seeds each year are preferable. Chewing and sucking pests are sometimes prone to damage young growth (new plants or old plants restarting into growth in the autumn), in which case dustings or sprayings at regular intervals with an insecticide should be given.

Regular light applications of a mixed garden fertilizer during the growing and flowering season will ensure a fine, long display of these remarkable plants.

Felicia capensis: 6–8 in. August–November. Mauve-blue to blue ray florets. Disc yellow. A very free-flowering, bushy little 'daisy', easily raised from seeds, also by cuttings and sometimes by division of rooted parts of the old plants after flowering. Old plants tend to persist and may be flowered a second year in which case they should receive water when conditions become excessively dry during the summer, and, as new growth commences in the autumn, given a little mixed garden fertilizer occasionally.

An ideal plant for edging purposes or for interplanting with the more dwarf spring annuals, and also very useful in the rock-garden.

It is found listed sometimes as *Aster capensis* or *Agathea coelestis*.

Felicia rotundifolia: 6–8 in. August–November. Very similar to *F. capensis*, and treatment, etc., also the same. Found described sometimes under the generic names *Aster* or *Agathea*. There does not appear to be any marked difference, botanically, between *F. rotundifolia* and *F. capensis*, and in fact some authorities regard these names as synonymous.

Both these Felicias are prolific seeders and self-sown seedlings make splendid little plants in the rock-garden. They both open their flowers much better under dull conditions than do some of the annuals such as *F. adfinis*, *F. Bergeriana* (Kingfisher Daisy) and *F. tenella*.

Felicia Pappei: 9 in. August–November. Blue to violet-blue florets. Disc yellow. A free-flowering species, with the flower-heads borne on longer peduncles than the above. The heads are also larger, and altogether a most attractive plant. Found listed sometimes as *Aster Pappei*.

Close to *F. Pappei* is another species, *F. amoena* (regarded by some as a variety of the former), which for horticultural purposes may be treated alike.

Felicia tricolor (*F. elongata*): 9 in. September–October. This species has comparatively large flower-heads, almost two inches across, ray florets white, with dark pink zone at base. Disc yellow.

It provides a mass display in spring, but, unfortunately, does not continue for long and neither does it appear practicable to induce a second crop by cutting back after blooming is over. For all that it is a spectacular plant in due season, either for edging, interplanting with spring annuals or as a rock-garden subject. Thrives in a well-drained spot in soil which is alkaline (in its habitat it is found on limestone).

This species is listed sometimes as *Aster elongatus*, and has also been known as *Agathea tricolor*.

It is easily raised from seeds which should be sown earlier than the previously mentioned species to ensure large plants by flowering time. May also be propagated by dividing up the rooted parts, after flowering, which should be started in small pots or tins. Left without disturbance, and given a little water occasionally when dry in summer, can be flowered a second year—flowering usually taking place earlier than young plants raised from seeds, and thereby extending the display of this species in the garden. Has occasionally produced mauve-blue-flowered seedlings in cultivation, possibly as a result of hybridizing with other species.

Nemesia foetens: 15–18 in. In bloom throughout the summer months. Pale pink to dark mauve-pink. Contrary to the annual species, this Nemesia appears to be hardly known in gardens.

Its qualities of free and prolonged flowering make it a very useful plant for various purposes. Seeds are produced freely and the whole plant should be trimmed back occasionally to encourage the production of new growth and maintain a neat shape. In fact this makes the plants almost perpetual-flowering through the warmer months of the year.

Watering, and light applications of a mixed garden fertilizer, should be given regularly. It is easily raised from seeds, and may also be propagated by cuttings.

Senecio glastifolius (Wild Cineraria): 5 ft. Mauve-pink in various shades. This is an erect plant which bears a mass of star-shaped flowers, which keep well.

Seeds germinate easily and self-sown seedlings are very robust. When sowing seeds this should be about December–January at the latest, as this plant is a true biennial and requires plenty of time in which to develop, and the earliest seedlings will make the largest specimens.

If very tall plants are not required and in order to encourage branching and so overcome 'legginess' before natural branching takes place, the young plants should be 'stopped' by pinching out the tips of the plants. Where plants are too leggy and tall there is danger of their being blown over as they reach the flowering stage. Staking the plants is useful, and, in fact, may be advisable unless the situation in which they are growing is well protected from winds.

Senecio grandiflorus: 4 ft. November–December. Purple. The leaves, which are divided, extend three-quarters of the way up the stems, from where the latter are more freely branched and carry numbers of Cineraria-like flower-heads.

Treated in cultivation as the previous species, it is a charming plant for the border or in the wild garden where it can receive moisture in winter and some shelter.

Regarded as a perennial, it can be treated as a biennial and raised either by seeds or cuttings. (Cuttings are taken after flowering is over.) The young plants should be 'stopped' early by pinching the growing tips out and so encouraging bushiness.

Senecio speciosus: 2 ft. November–December. Purple. The leaves in this species are somewhat basal, from which the stems arise, branched at the top, bearing flower-heads which are not numerous but individually larger than is the case of *S. grandiflorus*.

General cultivation is the same as the above two species and best treated as a biennial.

Some Impressions and Reflections of a Plant Collector

By T. P. STOKOE

THE charm and beauty of an English landscape in spring is a sight to be remembered. I recall, when travelling in the Southampton to London express, a lady from the Karoo excitedly commenting on the flower-spangled meadows—Laburnum, Hawthorn, Meadowsweet, etc.—as the train rushed through a land of trim farms set in seemingly illimitable green pastures. I plead guilty to a like impression of my first sight of South African flora over forty years ago, when I was on a springtime week-end tramp along the foreshore from Camps Bay.

So many lovely flowers, widespread and various, I hesitated to trespass over what I thought was a private garden. Every flower was new to me, and I had to be persuaded to walk over them. Coming from a land where every flower, however humble, has at least one common name, I was keen to know the names of the bewildering variety of flowers surrounding me. My companion was not very helpful, Bloublom, Rooiblom, Geelblom and quite a number of Ek-weet-nies, the latter predominating. 'Why don't you make a collection? Take them to a herbarium and make a nuisance of yourself there!' I followed the advice and soon became known as a persistent inquirer. As an active member of the Mountain Club of South Africa, of which Dr. E. P. Phillips was then Hon. Secretary, I soon had the opportunity, in my dual role of mountaineer and collector, when stationed for a long spell within a few miles of the Klein River Mountains near Stanford, Caledon District.

My first contribution was a bit surprising; a new Leucadendron, two long-lost Ericas and a rare Mimetes. Other new and interesting plants followed as my searching increased. Many of the mountain landowners had never visited the higher sections of their properties. The shepherds did that, and showed their diligence by burning every tree or bush that could hide a sheep. That any grown-up man should 'Klim die berg vir 'n blom, wanneer daar blomme op die plaas groei' didn't make sense. It was just too 'insupposable'! 'Mineraal? Ja.' Collecting flowers was just 'slim' camouflage to hide my real purpose of hunting for gold-bearing rock. Doubtless I would one day turn up, ask for an option on the farms and make millionaires of them. I hardly ever came across their shepherds; probably they were keeping an eye on me.

Only on two occasions did I see a living soul except myself. Once I led a young farmer to a cave I had found, containing bat guano. He shyly entered, but came out like a flash, and sprinted down the mountainside out of sight! The following day I asked him the reason why. He told me it was dark inside, and just as he was going to light a candle, he heard something say 'Gurrrrh'. Then, 'ek hardloop'! On another occasion, from a suitable and safe spot near the crest, I tried out some top notes of a recent opera and added a yodel or two. Peering over the top, I was surprised to see a shepherd and his dog, immobile and seemingly transfixed; whether charmed or paralysed, I could not tell. Slipping back again I gave another excerpt, and returned to see the man and dog pelting down the mountainside as if all the spooks and spirits of the mountain were after them! No doubt he would have a marvellous tale to tell at the farm, with an air of veracity carrying conviction.

At one time, much of the crest of the Klein River Mountains was covered by forest. One end, between Stanford and Akkedisberg Outspan, was clothed by a dense and damp section of trees. It was a refuge from the prevailing south-easters, and had defied all efforts to be burnt. About 1888, quoth my informant, an old shepherd, 'I go to the bush at one end. I cut it down, and keep on cutting it down. Then, when it was dry, on a hot day, and the wind all right, I light a match! Allemagtig! Like a volcano it brand. Man, skaap vreet lekker after that!' The only trace of tree growth I could find, thirty years afterwards, was a few branches of *Cunonia capensis* peeping out of a clump of rocks protecting the roots. *Erica lanuginosa* had survived, favouring shade, also a bushy type of Erica I had not seen before, or since, about two feet high, with hispid leaves and flowers. I did meet one farmer who conceded that veld-firing could prove very unprofitable. He had proved it. Having burnt out some kloofs on his mountain farm, two of his best oxen had climbed too far up to graze on the young grass. They found it impossible to turn round and retreat. They stumbled, fell and broke their 'verdomde' necks!

A strange fire, half-way up the precipitous face of Du Toit's Peak, puzzled me for some time. It was impossible for any human being to reach it. I found out later that a party of climbers had dislodged a big rock near the top. In falling, it had smashed to splinters and ignited the herbage on the ledge.

The most devastating fire on Table Mountain was at Christmas, 1935. Quite by accident I saw it start, probably the only person to do so. I had strolled from my camp behind the Western Table at the top of Fountains Ravine, to look down on the city below. From a spot behind the Jewish Orphanage, I noticed a heavy spurt of smoke arise, and almost immediately afterwards, another spurt of smoke—obviously a deliberate act. I thought little of it. It seemed so insignificant and likely to be put out soon. It was not. The fire swept around the whole front of the mountain beyond Newlands and Rondebosch and burnt out Window and Skeleton Gorges. A change of wind saved Kirstenbosch and Groote Schuur. Seven hundred men were engaged throughout the Christmas holidays, and the damage was roughly assessed at £250,000.

Experience gained on the Klein River Mountains proved useful on excursions further afield. Precious time climbing to reach the summit left little time for exploration. The hurried descent in the gloaming naturally suggested camping somewhere near the top. In those pre-motor days, Cape carts, shanks's pony or carriers were the only means of the pilgrim's progress—rather rough going, but the joy of wakening in the early morning, physically and mentally refreshed, on the top of the world, was more than ample compensation for the effort. It soon became clear that the apparent rarity of many flowering plants was due to their inaccessibility.

Dr. Marloth, a near neighbour, with whom I had many interesting talks, was particularly keen that I should explore some of the isolated mountains, island-like in seas of Karoo or Bokkeveld; also, plants growing on certain mountains, say of Table Mountain sandstone, that should also be flourishing on mountains of the same country rock. Thus, *Klattia partita*, known only from the Langeberg, must, he insisted, also be growing on the Hottentots-Holland Mountains and I must find it there.

Eventually, to my great joy, I found an obvious Klattia near a double line of beacons on the Steenbras watershed. It was not the real *K. partita*, but was a closely allied new species. Subsequently I did find the real Klattia on the south side of Kogelberg. When I called upon the Doctor, he was ill and could not be seen. I gave the specimens to his son Raymond, asking him to hand them to his father. Before I reached the gate, I was called back. 'Come at once, my father wishes to see you.' I found the Doctor sitting up in bed quite excited. 'Where did you find it? The Hottentots-Hollands! I knew, I knew, I knew you would find it there! This has done me more good than any medicine.' I left him very happy in the knowledge that his hypothetical keystone had been well and truly laid. Many interesting persons found their way to 'Ellerborn', Dr. Marloth's home. One of Dr. Marloth's callers was Mr. A. K. Bulley, a kindly old gentleman, tall and white bearded. He was a retired cotton-broker and the owner of one of the finest private gardens of rare and beautiful wild plants in the north of England. He asked me to collect seeds of anything beautiful and of outstanding merit. 'Send part to Kirstenbosch and Kew, and do not forget to charge the expense to me.' Mr. Bulley gave Kingdon Ward his first commission to collect plants in China. He was also a patron of G. Farrer, who also collected for him in the East. I did collect a few seeds of a special type of Iridaceae, but as they cost nothing, I made no charge and I doubt if they germinated.

I have before me a photograph taken recently from the top of Spinnekopkloof in the Hottentots-Holland Mountains. Near there I have camped at least once a year for the past thirty years and until a few years ago I had never seen a vestige of *Priestlya calycina* but after the biggest fire that swept throughout the Hottentots-Holland in 1945, the whole area surrounding my old camping-place was literally covered by young plants of that species of Priestlya. Another case of interesting regeneration after fire was observed on a barren stony plain in the Bosveld Mountains where I found seven female plants of *Leucadendron nervosum*, all bearing infertile cones. No male plant was visible. Four years later, every plant was burned off and four years after that, several female and male plants were to be found! I collected fertile seeds which germinated at Kirstenbosch.

I had several 'musts' of Dr. Marloth's. One in particular was a member of the Penaeaceae group, *Glischrocolla lessertiana*. No herbarium specimen of it was in South Africa, but a bit of Masson's collecting was overseas and I carried a note from the Doctor requesting me to have a look at it. The specimen was not particularly informative, a scrap of withered material, brown and faded, conveying little semblance to the lovely pale yellow and pink flowers with vivid scarlet bracts. It was at the Herbarium at Kew that I heard from Dr. Hutchinson that Dr. Marloth had passed away during my voyage to England. A great shock it was to me and quite unexpected, although he had quietly commented during a climb up Table Mountain a little while before, that the mountain seemed to be growing higher and higher. But this aspect was nicely balanced by the fact that he was acquiring a keener appreciation of the views, and spent more time than of yore admiring the beauty of the lower slopes as seen from above. It was almost two years after my return to South Africa that I was fossicking round the top of Landdroskop in the Hottentots-Holland Mountains, screening the crests of isolated buttresses that had broken away from the main bastion. Some were natural fireguards, and on one of them I noticed something new to me, obviously Penaeaceae. It proved to be the long-lost Glischrocolla! Whatever joy I may have had in realizing the find, it was greatly modified in knowing that Dr. Marloth was not at hand to thrill at the thought of another lost sheep brought safely home to the fold. Later, another patch was found on an almost inaccessible ledge below the top of a high cliff. It was a fair-sized group of plants consisting of really fine specimens. The ledge, completely hidden by the plants, showed doubtful foothold. After much hesitation, I carefully slid down a worn chunk of rock, gathered a few specimens and was exceedingly glad to get back again.

It has ever been my practice, when I have had a mountain to climb, to reach the top as soon as possible before the weather intervened and made the climb impossible. About a decade ago, having already passed the allotted span, I essayed to climb the Riviersonderend Mountain the morning following my arrival. I found the going a bit heavy and nearly gave up ere I reached the top. I concluded the trend of years was making itself felt, and the time to steady up was 'right now'. Having a congenital distaste to self-imposed discipline, I essayed the climb again some years later. I had been asked to look out for a certain Bruniaceae last found by Zeyher in the neighbourhood. I came across the plant rather surprisingly, before I had got well away and hastened down to pack and post the fresh material to the botanist interested. The following morning I was off early. This time I came across an emaciated sheep with its legs wedged between two rocks. I released it and came down to the farm again to apprise the shepherd. The following and third morning, I again sallied forth, felt practically no fatigue and reached the top comparatively fresh. The two days spent on minor excursions had worked as acclimatizers. One may grow too old to climb some day, but for the present, to quote my bilingual farmer friend, it is just too 'Insupposable'.

Mr. T. P. Stokoe, known to all Cape botanists, and to many others too, is a great collector of botanical specimens. Since he came to South Africa in 1911 he has spent most of his week-ends and holidays climbing mountains and at 87 years of age this is still his main form of recreation. He has collected numerous plants new to science and no less than thirty of these have been named after him, such as *Protea Stokoei, Brunia Stokoei, Watsonia Stokoei, Erica Stokoei, Gladiolus Stokoei, Leucadendron Stokoei*, etc. Most of them were found in the Hottentots-Holland Mountains and very often under extreme difficulties, as the following extracts from a letter written to one of his friends will indicate.

> 'I regret to report that for the third successive time I have essayed to botanise on Kogelberg at this season of the year (August). Out of nineteen days spent on or near the mountain I have had but two fine days. . . . We reached the unsheltered nek just in time for me to fix the tent and have a hurried meal before the mist came down when I made all snug before wriggling into my sleeping-bag. It soon began to blow very hard and rain and sleet came sweeping across the nek. The side strings of the tent soon snapped and the windward flap blew open. I managed somehow to tear a hole in the tent roof as I grabbed to pin it down again. Soon one of the poles went; this was all to the good as it decreased the resistance. My waxpaper groundsheet soon filled with water which I removed, hoping the ground was porous. It wasn't. Soon I was wet through, as the water continued to run down the tent furrows until it met an obstruction, this was me, when the water just seeped through upon yours wearily. All night and the following morning it continued to rain, when I thought I would make an effort to pack a few necessaries and go back to the siding at Steenbras. My lower extremities, much to my surprise, refused to function. Neither could I repair tent damage; my fingers the colour of parchment, corrugated and lifeless just wouldn't work, so I wriggled back to my wet bag and there I remained until the following midday when the wind dropped. I was surprised to find how weak I was, for, after all, I had just lain in one place, just sleeping and killing time. My lower limbs were swollen and my fingers, without feeling, looked as if they had just finished a week's washing in cold water. Matches were sodden; no fire for food or warmth. So back again into the wet sleeping-bag and hope for finer weather which materialized on Thursday. After many efforts I managed to get a match to strike upon the dried box and hastened to make a huge fire but the old Priestlya and Brunia, in spite of their woody look, burnt like pith. Although I could scarcely walk I felt myself improving and I actually went to sleep in a dry bag!'—*Ed.*

THE BOTANICAL SOCIETY OF SOUTH AFRICA

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1954

YOUR Council has pleasure in presenting the Forty-first Annual Report of this Society for the year ended 31 December 1954.

Four meetings of Council were held during the year.

MEMBERSHIP. 311 New Members were enrolled. Resignations and deaths totalled 116, while 187 Members who were two or more years overdue with their subscriptions were struck off the membership roll. Actual net gain in membership, 8. Total membership of the Society stands at 2,678, including 173 Life Members. Obituary: The deaths of 36 Members during the year are recorded with sincere regret.

FINANCIAL. Subscriptions received amounted to £2,691 3*s*. 5*d*. Donations totalled £309 18*s*. 1*d*. and interest on investments was £166 8*s*. 7*d*., making a total of £3,515 18*s*. 9*d*. Expenditure amounted to £910 6*s*. 2*d*., leaving a balance of £2,605 13*s*. 7*d*. which forms the Society's Grant to the Trustees of the National Botanic Gardens for 1955. The Life Members' Fund stands at £2,315 7*s*. 3*d*. Fixed Deposits total £2,330 13*s*. 7*d*. Other assets: Balance at the Cape of Good Hope Savings Bank £852 14*s*. 3*d*. United Building Society Savings Bank £68 2*s*. 8*d*. Post Office Savings Bank £86 1*s*. 11*d*.

DONATION OF £300. The Council's very grateful thanks are hereby recorded to Mr. and Mrs. Frank Connock for their generous donation of £300. Learning of the deficit of this amount in the Society's Grant to the Trustees for 1954, Mr. and Mrs. Connock sent this sum and said that they had done so in appreciation of the many happy hours they had spent at Kirstenbosch. This generous donation forms part of the Society's Grant to the Trustees for 1955.

JOURNAL OF THE BOTANICAL SOCIETY, PART XXXIX. Edited by Professor H. B. Rycroft in succession to Professor R. H. Compton. Was published during the year.

'WILD FLOWERS OF THE CAPE OF GOOD HOPE.' The balance of £700 owed to the Department of Education, Arts and Science, at 31 December 1953, was paid during 1954. All expenses in connection with the printing of this book had now been met, leaving a balance in the bank of £170 9*s*. 3*d*. at 31 December 1954. In July, Messrs. Juta & Co. Ltd. were appointed sole distributors of the book, taking over all unsold copies, amounting to 4,777.

ROYAL HORTICULTURAL SOCIETY'S SESQUICENTENARY. The Botanical Society was represented by Mr. D. R. D'Ewes and Mr. M. Clough at these celebrations which were held in London in July 1954. Mr. D'Ewes presented an Address of Congratulation on behalf of the Society.

EIGHTH INTERNATIONAL BOTANICAL CONGRESS. Professor R. S. Adamson represented the Botanical Society at this Congress in Paris in May. The centenary of the Société Botanique de France was celebrated as part of the activities of the Congress. Medals were presented to those botanists who were elected as 'Presidents d'Honneur'. Professor Adamson received one of these medals which is now housed in the office of the Botanical Society at Kirstenbosch.

SEED DISTRIBUTION. 13,989 packets of seeds were distributed to Members during the year by the Gardens.

DEVIATION OF RHODES DRIVE. A Memorandum submitted by Professor Rycroft for the deviation of Rhodes Drive at the National Botanic Gardens received the full support of the Council of the Society, which in turn submitted its recommendations in support of the scheme to the local bodies concerned. The serious difficulties encountered by the Gardens due to the present location of Rhodes Drive stress that it is essential to deviate the road so as to lie completely outside the Gardens.

MEMBERS' MEETINGS. The following were held during the year:

23 *March*. 8.15 p.m. Lecture Hall, Kirstenbosch. Annual General Meeting. After which Mr. F. du Toit showed a series of colour slides depicting the 'Panorama of the Cape'. 90 Members present.

15 *May*. 3 p.m. Visit to Mr. B. Carp's Wild Flower Nursery, at Hout Bay. Afternoon tea was served after a tour of the nursery. 60 Members present.

15 *June*. 8.15 p.m. Lecture Hall, Kirstenbosch. 'The Metasequoia glyptostroboides' was the subject of an illustrated talk given by Professor H. B. Rycroft. 70 Members present.

17 *August.* 8.15 p.m. Lecture Hall, Kirstenbosch. Mr. A. J. M. Middlemost, Assistant Curator of Kirstenbosch, gave an interesting talk on 'Garden Lawns'. 70 Members present.

11 *September.* 3 p.m. Anniversary Meeting, Karoo Garden, Worcester. About 120 Members attended this function which was held in perfect weather, the Garden looking at its best. Speakers included His Worship the Mayor of Worcester, who made a special appeal for Worcester residents to support the Botanical Society, and Professor Rycroft. After a tour of the Garden conducted by Mr. J. Thudichum, Curator, tea was served by Mrs. Thudichum and ladies.

26 *September.* 11.30 a.m. 'A Botanical Ramble through Houwhoek Forest' provided a most enjoyable outing. Mr. C. St. L. Searle, District Forest Officer, by whose courtesy the visit was arranged, together with Dr. G. J. Lewis and Mr. J. S. Linley, staged a representative collection of the local flora.

9 *October.* Annual Gathering of Members on the New Lawn, Kirstenbosch. Approximately 250 Members assembled on the Lawn in perfect weather to hear Mr. Baxter and Professor Rycroft report on the year's work at Kirstenbosch. After refreshments, the Gardens staff conducted Members on a tour of the Gardens, the Spring flowers being at their best.

6 *November.* 3 p.m. Mr. and Mrs. A. Sieger were our hosts when they kindly allowed Members to view their beautiful garden at 'Forest Lodge', Parelvallei, Somerset West. After a delightful tour of the garden Members were entertained to tea by Mr. and Mrs. Sieger. 110 Members attended.

13 *November.* 3 p.m. The gracious old-world charm of the garden of Mr. and Mrs. L. Ussher, 'Luncarty', Rhodes Drive, Newlands, provided the setting for a visit by Members. The weather, which was rather cold and windy, prevented many Members from attending, but did not in any way deter the pleasure of the 80 Members who did attend. Tea was kindly provided by Mr. and Mrs. Ussher.

As in former years, it would appear that the meetings held during 1954 were thoroughly enjoyed by all. Much of the praise due for this enjoyment must go to those who so generously gave their time and services and opened their gardens for these functions. The Council's very sincere thanks are recorded to all who helped in any way to make these meetings such a success.

Office Bearers. The following were elected to serve for the year at the Annual General Meeting held in March:

President: Mr. W. Duncan Baxter.

Vice-Presidents: Mr. C. J. Sibbett, Professor R. H. Compton, The Rt. Hon. E. F. Watermeyer, P.C.

Hon. Secretary/Treasurer: Mrs. W. N. Hall.

Council:

Professor R. S. Adamson
Dr. A. J. Ballantine
Mrs. F. Bolus
Mr. C. H. Clayton
Mr. M. Clough
Mr. D. R. D'Ewes
Dr. E. L. Gill
Mr. C. R. Gohl
Professor W. E. Isaac
Miss M. E. Johns
Dr. M. R. Levyns
Dr. G. J. Lewis
Mr. J. S. Linley
Miss K. Murray
Mr. H. N. Porter
Professor H. B. Rycroft
Mr. C. J. Sibbett
Mr. L. A. Solomon
Miss E. L. Stephens
Mr. W. C. West
Mr. G. E. Williamson

Mr. C. J. Sibbett was re-elected Chairman at the first meeting of the Council.

Thanks. The Council of the Society records sincere thanks to the daily press for their courteous co-operation at all times in recording the activities of the Society during the year. Thanks are also cordially recorded to the Cape Provincial Administration for the use of their rooms for meetings of Council during the year.

C. J. Sibbett
Chairman

(Mrs.) W. N. Hall
Hon. Secretary/Treasurer

Wild Flowers Protection Section Committee

ANNUAL REPORT FOR THE YEAR ENDED 31 DECEMBER 1954

The Committee met four times during the year.

Membership of the Section. 79 New Subscribers were enrolled during 1954.

Financial. A total of £225 15*s.* 11*d.* was received in subscriptions during the year which is an increase of £22 16*s.* 11*d.* over the amount received the previous year. The annual Grant of £150 was received from the Cape Provincial Administration. Expenditure of the Section was £284 5*s.* 3*d.* Balance in the bank as at 31 December 1954, £380 6*s.* 2*d.* Fixed Deposits total £606 11*s.* 1*d.*

Wild Flowers Protection Ordinances. The Wild Flowers Protection Committee in collaboration with the Cape Provincial Administration and the Department of Nature Conservation have, for a long time, felt that the existing Ordinances have been in need of revision. In February, therefore, a special meeting of the Committee was held to review a Draft Ordinance to Amend and Consolidate the Ordinances relating to the Preservation of Wild Flowers as submitted by the Cape Provincial Administration. The Committee submitted its recommendations in respect of this Draft Ordinance, which, the Cape Provincial Administration advised, would receive careful consideration when the new Ordinance was drafted. The Committee's recommendations were also brought forward at the Nature Advisory Board's meeting in Knysna in February by Professor Rycroft, the Committee's representative.

Inspection of Wild Flower Nurseries. Mr. H. D. W. Meyer, our appointed officer, accompanied by Mr. V. Karg, senior Revenue Inspector, Cape Provincial Administration, carried out an intensive inspection of registered wild flower nurseries and their sites during the year. In most cases they were able to furnish a satisfactory report on their visits.

Wild Flower Shows. Mr. Meyer and Mr. Karg have attended some of the wild flower shows held in the Cape during 1954, and have submitted reports on their findings. Some of these reports have been of grave concern to the Wild Flowers Protection Committee, which has in turn reported to the Cape Provincial Administration. The Committee has submitted special recommendations to the Administration in respect of wild flower shows.

Wholesale Plucking and Stealing of Wild Flowers. As in former years the Committee has received many reports of the stealing and unlawful picking of wild flowers from the veld for sale in the public market. During 1954, many reports were received of Coloured flower-pickers stealing wild flowers from the Mountains in the Kalk Bay/Clovelly area. Thanks to the diligence of our Inspectors, in particular Mr. J. S. Linley, who has received the fullest co-operation from the Fish Hoek Police, many of these offenders have been prosecuted.

Contraventions of the Ordinances. Mr. Meyer has been responsible for bringing 112 offenders before the Courts during the year. Of these, 90 have been convicted, while 17 cases are still pending. A total of £181 10*s.* has been paid into the Courts in fines. These figures show a decrease of 100 offenders over the year 1953. In addition to his general duties, Mr. Meyer, accompanied by Mr. Karg, has spent many week-ends patrolling the roads in the Cape Province keeping a lookout for motorists and others who ignore the warning that no wild flowers may be picked within 50 yards of the centre of public roads. Offenders totalling twelve have been caught, which included some actually picking in wild flower reserves.

Members of the Committee, 1954. The following were re-elected by the Council of the Botanical Society:

Professor H. B. Rycroft
Mr. C. J. Sibbett
Mrs. F. Bolus
Mr. C. H. Clayton
Mr. C. R. Gohl
Mr. J. S. Linley
Miss M. E. Johns
Miss K. Murray
Mr. H. N. Porter
Mr. W. C. West
Mr. C. St. L. Searle

Professor Rycroft was elected Chairman at the first meeting of the Committee in succession to Professor R. H. Compton who retired on 31 December 1953, after many years as Chairman.

H. B. Rycroft
Chairman

(Mrs.) W. N. Hall
Hon. Secretary/Treasurer

THE BOTANICAL SOCIETY OF SOUTH AFRICA

BALANCE SHEET as at 31 DECEMBER 1954

	£	s.	d.	£	s.	d.
Life Membership Fund:						
Balance as at 1/1/54	2,230	7	3			
Add amount received during 1954	85	0	0			
				2,315	7	3
Subscriptions Paid in Advance				150	1	5
Dr. Bernard Price Bequest Fund				820	0	0
National Botanical Gardens:						
Surplus for year				2,605	12	7
				£5,891	1	3
Wild Flower Protection Section:						
Balance as at 1/1/54	860	14	11			
Grant from Provincial Administration	150	0	0			
Subscriptions (Ordinary) received during 1954	225	15	11			
Interest received during 1954	23	5	8			
	1,259	16	6			
Less 5% of 1954 Subscriptions credited to General Administration:						
Expenses £11 6 0						
Salaries 265 0 0						
Stationery, Postage, Travelling Expenses, Bank Charges, etc. 7 19 3						
	284	5	3			
				975	11	3
				£6,866	12	6

	£	s.	d.	£	s.	d.
Cape of Good Hope Savings Bank:						
Deposit with interest at 4% p.a. to 31/12/54				852	14	3
Post Office Savings Bank:						
Deposit with interest at 3% p.a. to 31/12/54				86	1	11
United Building Society:						
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/54	605	10	8			
Savings Bank Account with interest at 3% p.a. to 31/12/54	1,068	2	8			
				1,673	13	4
South African Permanent Mutual Building Society:						
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/54	491	18	6			
Fixed Deposit for 12 months with interest at 4% p.a. to 31/12/54	904	9	9			
				1,396	8	3
Cash—At Standard Bank of S.A., Ltd.:						
Current Account .. £955 10 1						
On Hand 7 2						
	955	17	3			
Less Liabilities as at 31/12/54	31	10	0			
				924	7	3
Miscellaneous Assets:						
Amount due from Wild Flower Protection Section				11	6	0
Dr. Bernard Price Bequest—Investment Fund:						
Fixed Deposit for 12 months with the United Building Society, with interest at 4% p.a. to 31/12/54	328	14	8			
Office Extensions	617	15	7			
				946	10	3
				£5,891	1	3
Wild Flower Protection Section:						
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society, with interest at 4% to 31/12/54	305	13	5			
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society, with interest at 4% to 31/12/54	139	9	8			
Fixed Deposit for 12 months with the S.A. Permanent Mutual Building Society, with interest at 4% to 31/12/54	161	8	0			
Cash at Standard Bank of S.A. Ltd.: Current Account	380	6	2			
	986	17	3			
Less Amount due to General Account	11	6	0			
				975	11	3
				£6,866	12	6

We have to report that we have examined the Balance Sheet with the Books and Vouchers of the Society, and have obtained all the information and explanations we have required. We are satisfied that the Securities are in existence and that the Society has kept proper Books and Accounts.

We are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and fair view of the state of the Society's affairs at the date thereof according to the best of our knowledge and the explanations given to us and as shown by the Books of the Society.

R. M. JOUBERT & CO.
Chartered Accountants (S.A.)
Auditors

2 *February* 1955
CAPE TOWN

INCOME and EXPENDITURE ACCOUNT for the Twelve Months ended 31 December 1954.

	£ s. d.	£ s. d.
General Administration Expenses ..		163 17 11
Audit Fees, 1954		15 15 0
Honorarium to Secretary-Treasurer ..		300 0 0
Bank Charges		11 10 11
Stationery, Printing, Duplicating, etc.		154 7 2
Journal No. XXXVIII — Expenses incurred during 1954		4 10 0
Journal No. XXXIX:		
Cost to date, including Printing, Despatching, etc.	339 7 2	
Less amounts received from advertisements	79 2 0	
		260 5 2
Surplus for year		2,605 12 7
		£3,515 18 9

	£ s. d.	£ s. d.
Subscriptions:		
Family Members	517 14 6	
Ordinary Members	2,173 8 11	
Associate Members	309 18 1	
		3,001 1 6
Donations		348 8 8
Interest on Investments		166 8 7
		£3,515 18 9

PUBLICATIONS ON SALE AT KIRSTENBOSCH

The following may be obtained by application, enclosing payment, to The Hon. Secretary, Botanical Society, Kirstenbosch, Newlands, C.P., South Africa. Prices include postage.

'Plants of Land and Sea'; W. E. Isaac	6*d.*
'The Genus Oxalis in South Africa'; T. M. Salter. (355 pages, 10 plates, 73 text-figures.)	35*s.*
'The Species of Oxalis occurring in the Cape Peninsula and how to distinguish them'; T. M. Salter	6*d.*
'General Hints on Raising Indigenous Plants from Seed'; H. F. Werner	6*d.*
'The Wilds, Johannesburg'; Miss G. Edwards	6*d.*
'A Tip for Horticultural Societies'; Dr. N. R. Smuts	6*d.*
'The Cultivation of Buchu'; H. F. Werner	6*d.*
'The National Botanic Gardens of South Africa, Its Aims, Functions and Policy'; R. H. Compton	6*d.*
'Plant Collecting in the Kaokoveld'; H. Hall	6*d.*
'Three Hundred Years of Trees'; R. H. Compton	6*d.*
'South African Proteaceae and their Cultivation'; H. F. Werner	6*d.*
'Progress in the Study of the Silver Tree Disease'; D. Olivier	6*d.*
'Pelargonium—A South African Contribution to World Gardens'; F. M. Leighton ..	6*d.*
'The Propagation of Succulents from Seeds and Cuttings'; H. Hall	6*d.*
Annual Reports of the National Botanic Gardens, 1913-54, each year	3*d.*
Reprints available of articles published in the 'Journal of South African Botany', on inquiry, each	6*d.*

'The Journal of South African Botany'; Vols. I-XXI, 1935-55, each volume in four quarterly parts; per volume 30*s.*, per part 10*s.* 6*d.* (To members of the Botanical Society 25*s.* and 8*s.* 6*d.* respectively.) Back volumes at price of publication.

JOURNAL OF THE BOTANICAL SOCIETY: BACK NUMBERS

The following Parts are obtainable at the prices shown. The principal contents are mentioned below: each part also contains full-size Plates, News and Notes, Reports, etc.

Price to Members of the Botanical Society 1/6; to non-Members 2/6

Part	VIII.	South African Geraniaceae.	L. Bolus.
		The Cultivation of Geraniaceae.	J. W. Mathews.
		Medicinal and Aromatic Plants in S. Africa.	R. H. Compton.
		South African Heaths.	L. Bolus.
		The Cultivation of Heaths.	J. W. Mathews.
,,	XIII.	Notes on Mesembryanthemum and Allied Genera.	L. Bolus.
		South African Succulents.	J. W. Mathews.
		Alien Trees at Kirstenbosch.	R. S. Adamson.
,,	XXI.	Aloe Marlothii: Some Forms and Hybrids.	G. W. Reynolds.
		Lawn Grasses on Trial at Kirstenbosch.	J. W. Mathews.
		How to form a Garden Library.	L. B. Creasey.
		South African Conifers for Garden Use.	J. W. Mathews.
		From New York to Kirstenbosch and Back.	S. V. Coombs.
,,	XXII.	South African Succulents at Kew.	Sir Arthur Hill.
		An Old Cape Frontier.	E. A. Walker.
		Our Wild Flowers and Their Protection.	F. Guthrie.
,,	XXIII.	Economic Plants at Kirstenbosch.	F. W. Thorns.
		Garden Gladioli—Their Origin and History.	L. B. Creasey.
		Growing Plants from Seeds.	S. G. Fiedler.
		Letters from an Early Cape Botanist.	M. C. Karsten.
,,	XXIV.	(Silver Jubilee Number.)	
		Kirstenbosch. (Broadcast 9 September 1938.)	R. H. Compton.
		Nature Study at Kirstenbosch.	M. E. Johns.
,,	XXVI.	The South African Genera of the Haemodoraceae.	W. F. Barker.
		Humus and Soil Fertility.	F. W. Thorns.
		Mountains and Their Vegetation.	R. H. Compton.
,,	XXVII.	Weeds: The 'New' Cape Flora.	R. S. Adamson.
		Drug Plants.	F. W. Thorns.
,,	XXVIII.	The Herbarium of the National Botanic Gardens, Kirstenbosch.	R. H. Compton.
		Nature Study in the Forests at Kirstenbosch.	M. E. Johns.
,,	XXX.	Cultivation of Bulbs from the Winter Rainfall Area of the Cape.	F. W. Thorns.
		Report on the Silver Leaf Tree Borer.	F. G. C. Tooke.
		The Magic of the Cycad Forest.	F. Milner.
		Report of the Sub-Committee on Veld Conservation, August, 1944.	
,,	XXXI.	Cape Annuals for the Garden.	F. W. Thorns.
		A Plea for South African Trees.	D. R. D'Ewes.
,,	XXXIII.	Indigenous Plants.	F. W. Thorns.
		The Species of Oxalis occurring in the Cape Peninsula.	T. M. Salter.
		A National Park in the Outeniquas.	R. H. Compton.
		Some Impressions and Comparisons.	H. Hall.
,,	XXXIV.	Opening of the Karoo Gardens, Worcester.	
		General Hints on Raising Indigenous Plants from Seeds.	H. F. Werner.
		The Cultivation of Succulents in South Africa.	H. Hall.
,,	XXXVI.	The National Botanic Gardens of South Africa: Its Aims, Functions and Policy.	R. H. Compton.
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(*b*) To augment the Government grants towards developing, improving, and maintaining fully equipped botanical gardens, laboratories, experimental gardens, etc., at Kirstenbosch and Worcester.

(*c*) To organize shows at which may be displayed the results of botanical experiments or cultural skill in improving the different varieties of South African flora.

(*d*) To enlighten and instruct the members of botanical subjects by means of rambles, meetings, lectures and conferences, and by the distribution of literature.

(*e*) To promote the preservation of the Native Flora of South Africa, to encourage public interest in it, and to co-operate with the Public Authorities and others in the attainment of this object.

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